

Amateur Radio



VOL 54, No 6, JUNE 1986

JOURNAL OF THE WIRELESS
INSTITUTE OF AUSTRALIA



Did You Catch the Jubilee Train?
JOTA can be fun!

Novice Notes

Open Wire Feed Multi-Band Dipole

Construct

VFO with Digi-Readout

or
VFO for the FT-707

or

A Bracket to hold a Hand-Held in a Vehicle

Aerials to experiment with

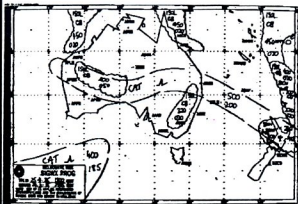
The Hentenna

Stepped Loop Antenna

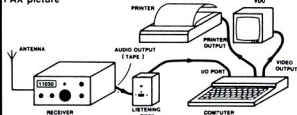
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Make a date now. The 21st and 22nd June is your appointment to become involved in the 1986 Novice Contest (refer rules last issue, p41). Be come involved and enjoy the fun, but remember to submit your log.

This month, a Stable VFO with Digital Read-out is detailed on page 10. This VFO uses available components (many of which can be found in the shack junk-box). It is simple, yet demanding in construction and with a little care, the satisfaction of completing such a project and using it is exhilarating.

There is also an External VFO for the FT-707 (p12), which fills a specific need for uses of this unit.

Two antennas are described, and one could be described a little weird. The Hentenna is an interesting small project and has proved most successful for its many users whilst the other is for users of all bands, but particularly the lower bands.

Novices Notes compliments the antennas with an Open Wire Feed HF Multi-Band Dipole and should be of interest to everyone from the DXer to the SWL.

Wondering where to go for your next holiday? Phil VK2BPC, had this problem and solved it by a trip to Norfolk Island. Phil gives an enthusiastic account of his DXpedition when he met with many of the resident amateurs on the island and the joy he had operating with low power.

Don't miss Amateur Radio is Contagious — a tribute by an amateur to his father who nurtured him into the ranks of a marvellous hobby.

Jamboree on the Air is fast approaching and lots of hints are given from one who was led into the hobby by JOTA.

The cyclone season in the north of our vast country did not pass without a decent cyclone making its presence felt. A small article depicts how WICEN assisted during Cyclone Winifred.

DEADLINE

All copy for inclusion in the August 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th June 1986.

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CHILDREN'S DAY

International Children's Day, 1st June, will see the amateur radio station of the Chinese Radio Sports Association (CRSA), together with the Beijing, Shanghai and Sichuan stations, participating in a festival for young amateurs.

These amateurs, mostly school students around 14-years of age together with a few primary school children around 10-years have been invited to operate the transceivers and send festival greetings to children world-wide. These greetings will be sent in English.

Last year, in a little over an hour, more than 70 stations had been contacted. Amateurs in the USA, USSR, Japan, Canada, India, Brunei and Hong Kong expressed their delight in contacting the young Chinese amateurs.

China began amateur radio communications in the late 1920s. The first amateur station of New China, BY1PK, was established in 1958. By 1966, six stations were established in the country, however, during ten years of cultural revolution all radio operation ceased. In March 1982, the CRSA station resumed operation with overseas stations.

With BY1PK, the stations of BY4AA, BY6AA, BY5RA and BY1QH are experimental bases for radio communication research and cradles for nurturing young radio specialists. Some children's palaces, scientific research station, universities and colleges plan to set up amateur radio stations to meet the needs of the young amateurs.

Building small transistor receiver sets has long

been a popular past-time with Chinese children, but it has only been in recent years that transmission has also become involved.

BY1SK is located in the Children's Science and Technology Centre of Beijing's Zuanwu district and has a radio group of around 24, chosen from applicants from middle and primary schools in the district. They attend the centre twice weekly to study English and to practice Morse code. The group is in the care of instructor Gong Kelu, who participated in radio activities when he was in middle school.

Mastering Morse and studying English involves a lot of hard work and occasionally the children become bored and want to drop-out. On these occasions Gong Kelu relates a story of a young telegrapher during a disastrous earthquake in the city of Tangshan, during 1976. Though he had been badly injured in the first shock, he rallied his forces and when other communication lines lay in rubble, he managed to keep in communication with Beijing so that the central government could plan rescue efforts. This helps the children see how important the skills they are learning really are.

Youngsters from the group are assigned to be in charge of radio communications in the city of Beijing during summer camps and sports meets and have been highly praised for their good work.

Adapted from China Reconstructs, October 1985 which was contributed by John Brennan VK4SZ



Editor's Comment

MORE TUB THUMPING!

I note in last month's issue that another member is taking me to task over the desirability of all amateurs belonging to their national society. He suggests that the individual non-member can still exert an influence on the political processes by which our legislative controls evolve; that the lone wolf can still have a political effect.

With respect, I am still forced to hold the opposite opinion. I have had experience over many years with various WIA committees assembling information on which negotiations can be based. Mostly such negotiations are with DOC or other Federal departments, but may also be with other societies, with IARU, or at Divisional level, with State or local government authorities. They may also be submissions to independent inquiries.

In some cases individuals, as well as the WIA, have put forward their ideas, for example by letters direct to Ministers. Usually it has been plainly obvious that individual opinions which do not reflect popular concepts will be politely, but effectively, ignored. Faced with the task of establishing a consensus acceptable to the majority, a Minister (or his advisers) can only take as a representative view that which is proposed by a representative body.

Frequently the WIA is asked by DOC what is our opinion of this or that individual submission. Clearly, the fact is that Government bodies do not have the time, or the inclination, to piece together a fragmentary jigsaw of individual letters. An organisation representing the majority of concerned individuals fits much better into the political system. If you want your view-point to carry the maximum of political weight, make it clear to your Institute first.

Arguments like these have been used by unions and associations of all kinds for decades. Few people will seriously disagree with them. But do not let us confuse them with other arguments sometimes raised in favour of compulsory unionism. There are some countries where you cannot get an amateur licence until you have joined the society. The society may even examine for, and award, the licence. Membership in those countries really is compulsory.

Our Australian tradition of rugged individualism has prevailed for many years over some who might favour compulsory membership. The WIA has no wish, nor could it have the power, to compel lone wolves to join. But our aim, as far as we possibly can, is to make the Institute so essential and attractive to Australian amateurs that none would wish to be outsiders!

Bill Rice VK3ABP
Editor



Visitor: "How nice for him! Now he can listen to all the best music."
Mother: "Yes — and it is so good for his ears — they did stick out so." — 1923

THE HENTENNA

The Hentenna was developed several years ago by members of the Sagami Club and was introduced to the hand-made mini-magazine, *The Fancy Crazy Zippy*, in January 1977, it was printed in the magazine *Radio No Seisaku*. It has become very popular with young people on 50 MHz.

This antenna was not developed by any antenna technicians but by radio amateurs through their experimentations. This is a real by the amateurs, for the amateurs, of the amateurs antenna.

Recently, many people in Japan have been working DX on HF with the Hentenna, with two people completing WAC on 28 MHz using it.

LET'S MAKE THE HENTENNA

Many may think it is a very strange name for an antenna but HEN means weird in Japanese. So let us see what is weird about it!

Figure 1 is the basic diagram of the Hentenna. It is half a wave length high and $\frac{1}{4}$ of a wave length wide. It produces horizontal polarisation. If you know a little about antennas, you may have thought that a vertically polarised wave would be produced. This is the first weird thing about the Hentenna.



called a *Hat Hentenna*.

Have you ever heard of such a weird antenna? Hentenna is the weirdest antenna of all the antennas in the world. But it also has other characteristics besides its weirdness.

CHARACTERISTICS

Hentenna's structure is simple. Setting up,

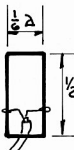


Figure 1.



Figure 2.

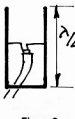


Figure 3.



Figure 4.

The next thing is that it is not really necessary to make it half a wave length high and $\frac{1}{4}$ of a wave length wide. You can make it a little fatter, thinner, taller or shorter. It still works well. A five to ten percent difference will not matter much. Mr. Ota, J1TCH, made a 3.5 metre high Hentenna for 50 MHz. It still worked very well.

The third thing is the way the SWR is adjusted. Figure 2 shows how to adjust the SWR. The lead point is moved along the element and fasten it where the SWR is the lowest.

It has additional weird characteristics. It has as much gain as the Yagi antenna, though it is much simpler. (Technical Editor's Comment: Antenna Gain claims should always be taken with a grain of salt. Particularly unsubstantiated claims). DX QSOs by ground wave have been made with the Hentenna.

Moreover, one amateur used the Hentenna with a 1.5 watt SSB transceiver to QSO between Izu Peninsula and Tokushima, a distance of about 450 km. This is unbelievable and also impossible with a dipole antenna.

Now, what if you cut the Hentenna in half? It still works! This is called a *Fork Hentenna*, see Figure 3. What if you make it round as shown in Figure 4? It still works, also! This one is

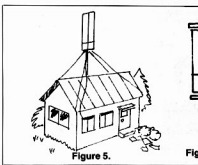


Figure 5.

adjusting and dis-assembling can be done in a short time. This makes it ideal for use as a portable antenna.

Mr. Shiroti JA7QFB, uses a portable Hentenna. It takes him only two minutes to set-up and one minute seven seconds to dis-assemble. This is very helpful in case it suddenly begins to rain or if there is lightning. Plus it is very easy to move around. You only require to carry the pole and some other small

Tadashi Okubo JH1FCZ (ex JA2EP)
5288 Kuruhara, Zama, Kanagawa, 229, Japan

Many Japanese amateurs have been worked in Australia using about 10 watts of power and the Hentenna antenna. Their signals are always quite readable.

accessories. It is very light-weight compared to the four and five element Yagi antennas.

There is no problems in a wind as the wind can just blow through it.

Hentenna's propagation pattern is a figure eight pattern so it is wrong to say that Hentenna is non-directional. But it has more gain than a dipole, so it can be called non-directional. It is unnecessary to rotate Hentenna, just erect it on the roof as you would a television antenna, without a rotator.

But, on the other hand, as it does have a figure eight pattern with no transmission or reception towards the sides of the antenna, the front to side ratio is very good.

LET'S MAKE IT YOURSELF

There are three ways to make the Hentenna. One is to make the element with wire and the frame with something like bamboo or wood. The easiest method is shown in Figure 6a.

Another way is to use aluminium pipes for the top and the bottom elements, and wire for the sides. This method is shown in Figure 6b. This is a very useful, portable antenna.

The third way of constructing a Hentenna is to make all the elements of aluminium pipes (Figure 6c). In this way, you can make a Hentenna which is suitable for 144 or 430 MHz.

Any of the three methods described above may be used, but the easiest method is explained here.

Set up the frame as in Figure 7. The frame needs to be very strong, so it is advisable to make it with wood, bamboo or aluminium pipe.

Connect both ends of an eight metre length of stranded wire to make a circle. It is okay to use a solderless terminal to link them together, but it is preferable to solder the join. It will be necessary to allow a little more than the eight metres specified for a soldered joint.



Figure 6 a.

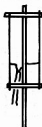


Figure 6 b.

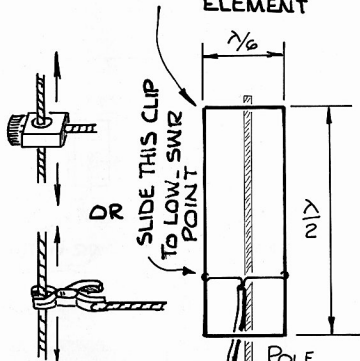
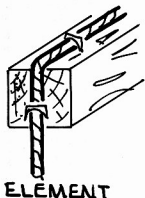
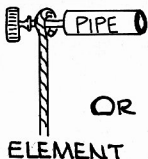


Figure 6 c.

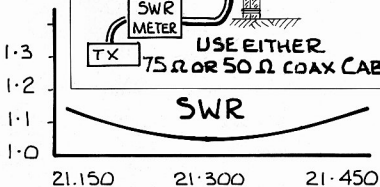
The wire element, just made, has to be fastened very tightly to the frame with some strong twine or polyvinyl chloride wire. See! It is beginning to look like a Hentenna!!

The coaxial cable can be either a 3c2v or 5c2v 75 ohm series or a 3D2v or 5D2v 50 ohm series cable. RG58U is also acceptable.

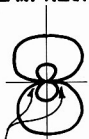
Connect the coaxial connector to the coaxial cable as shown in Figure 14.



USE EITHER
75 Ω OR 50 Ω COAX CABLE



BEAM HENTENNA

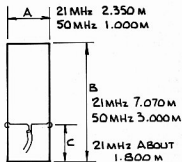


VERTICAL ELEMENTS
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1,000 - 1,100 M
ON 50 MHz

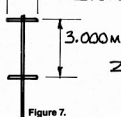


Figure 7.

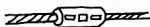


Figure 8.

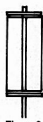


Figure 9.

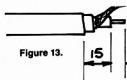


Figure 13.



Figure 14.

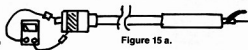


Figure 15 a.

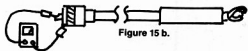


Figure 15 b.

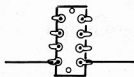


Figure 16 a.

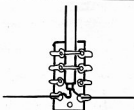


Figure 16 b.

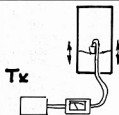


Figure 17.

SWR METER

When the cable is connected make a continuity test on the insulation and centre wire to ensure that there are no shorts.

Connect 70 cm of tinned antenna wire to a eight pin terminal board as directed in Figure 16a. Solder the coaxial cable to this and secure it with tinned wire or similar. (Figure 16b).

Temporarily, set up the Hentenna in your chosen location. Find the point of the element where the SWR is at its lowest and mark this point.

Take the Hentenna down again and solder the feeder to the marked points.

There! Wasn't it easy? The only thing remaining is to erect it and steady it with guy-wires.

Presented by Kazunobu Nagatsu JK1IZF, 3310-1 Hei, Toyooka-town Mitsukaido-city, Ibaraki, 303 Japan and contributed by Ron Mills VK5XW.

Be part of the fun during the 1986 Novice Contest
But please remember to submit your log to the FCM

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AR86

PARASITIC BEAM PROGRAM FOR COMMODORE 64

Joseph Ortuso VK7NJ0
43 Bayfield Street, Bellerive, Tas. 7018

The following program enables measurements to be calculated for a three-element beam.

With this program you will be able to find out measurements for a three element beam for any frequency between 20 and 10 MTB choosing any spacing between .1 to .30 wavelength.

It will also give approximate impedance at the feed point.

All the measurements are given both in imperial and metric.

An impedance matching system will still be required and final tuning adjustment will still be needed. In other words, all the rules in putting up a beam still apply.

The listing is pretty straight forward and in line zero you may wish to alter the screen colours. It is now set for my monochrome monitor. You will find the whole program is pretty well formatted.

```
0 POKE53280,4:POKE53281,4:PRINT"■"
5 PRINT"□"
10 PRINT" *** PROGRAM BY JOSEPH ORTUSO***"
20 PRINT" FOR COMMODORE 64":PRINT
30 PRINT" A PROGRAM TO CALCULATE DIMENSIONS FOR A 3 ELEMENT PARASITIC BEAM"
40 FORI=1TO40:PRINT"-":NEXTI
50 PRINT" USE 1.5 INCHES OF 0.DIAMETER TUBING FOR 20 MT."
60 PRINT" AND 1 INCH OF 0.DIAMETER TUBING FOR 15 MT. AND UP":PRINT
70 PRINT" THE FORWARD GAIN FOR VARIOUS SPACINGS IS BETWEEN 7.5 AND 8 DB."
80 FORI=1TO40:PRINT"-":NEXTI
90 INPUT" WHICH FREQUENCY (MHZ) ":F:PRINT
100 PRINT" WHICH SPACING:INPUT".1 .15 .20 .25 .30 OF WAVE/L.":S
110 IFS<>.1ANDS<>.15ANDS<>.20ANDS<>.25ANDS<>.30THENPRINT"INVALID ENTRY":GOTO100
120 REM A=DRIVEN,D=DIRECTOR,R=REFLECTOR
130 IFS=.1THENA=474.5:D=465:R=500:H=15
140 IFS=.15THENA=472.8:D=460:R=496:H=20
150 IFS=.20THENA=470.5:D=452.5:R=490:H=30
160 IFS=.25THENA=468:D=442.5:R=484:H=48
170 IFS=.30THENA=467:D=435:R=480:H=80
180 A=A/F:D=D/F:R=R/F:X=0.305
190 A1=A*X:D1=D*X:R1=R*X
200 W=30000/F
210 W1=W*S/100
220 W2=W*S/100/0.305
230 PRINT"□"
240 PRINTTAB(12)"ELEMENT LENGTH":PRINT
250 PRINT" FOR":F:"MHZ. AND":S:"OF WAVEL. SPACING"
260 FORI=1TO40:PRINT"-":NEXTI
270 PRINT" DRIVEN EL."
280 PRINTTAB(6)A:"FT OR":R1:"MT":PRINT
290 PRINT" DIRECTOR"
300 PRINTTAB(6)D:"FT OR":D1:"MT":PRINT
310 PRINT" REFLECTOR"
320 PRINTTAB(6)R:"FT OR":R1:"MT"
330 FORI=1TO40:PRINT"-":NEXTI
340 PRINT:PRINT"THE SPACING IS" ;W1;"MT"
350 PRINT:PRINT"OR.....":W2;"FT":PRINT
360 PRINT"RADIATION RESISTANCE IS APPROX.":H;"HOMS"
370 FORI=1TO40:PRINT"-":NEXTI
380 PRINT" WOULD YOU LIKE TO COMPUTE AGAIN? Y/N"
390 GETA:IFA#=""THEN390
400 IFA#<"Y"ANDR#<"N"THEN380
410 IFA#="Y"THENGOTO5
420 IFA#="N"THENPRINT"□":END
```

STEPPED LOOP ANTENNA

On the lower frequency amateur bands, particularly 160 and 80 metres vertical polarisation is often desirable, but usually difficult and expensive to obtain.

Bruce Hannaford VK5XI
57 Haydown Road, Elizabeth Grove, SA. 5112



A large horizontal loop antenna is a good all band antenna but certainly lacks in vertical polarisation as needed on these bands. To a considerable degree the stepped loop corrects this deficiency and this stepped design could also be applied with advantage to horizontal dipoles as well. For additional general information regarding the horizontal loop antenna see *Amateur Radio*, December 1984, but correct two measurements shown in the first column, 28 metres should be 18.2 metres and 112 metres should be 73 metres.

The stepped loop is based on the idea that even a very short vertical section in a high current, high radiation portion of an antenna will give a considerable amount of vertically polarised signal. Actually, in any vertically polarised antenna there is not much point in keeping the low current, low radiation portion going straight up, often at great expense. This is born out by T and L type antennas where much of the low current portion is horizontal. It is also clear that even a small vertical section can be very useful when we consider loaded vertical whips often only a metre or two in length.

Now for some basic facts about large horizontal loops. The loop is normally a full wave-length on the lowest frequency band to be used. The length required is roughly equal to a wave-length in space (no end effect). Metres length = 300 divided by frequency in MHz. The loop will give a fairly low impedance feed point on all multiples of its fundamental full wave frequency. At the fundamental, the impedance will be about 100 ohms and as the harmonic number is raised the impedance will increase until it is about 200 ohms at the eighth harmonic. The vertical radiation pattern of a purely horizontal loop (no steps) is largely straight up at its fundamental frequency but as higher harmonics are used this vertical angle becomes lower. The horizontal radiation pattern when the loop is fairly close to the ground gives good all round coverage. The shape of the loop is not very important so long as a large area is enclosed, a circle would be ideal, a square is a good reasonably close compromise that needs only four poles to support it. Great heights are not needed and if used tend to make the horizontal radiation pattern break up into lobes instead of being omni-directional. I have heard of the loop being used with good results only about a metre above ground, however I recommend enough height to be reasonably clear of any obstructions. The loop is a broadly resonant antenna which is also very useful. The loop usually gives a noise reduction when compared to horizontal dipoles. Apparently, the noise is largely shorted out in the loop.

Looking at the diagram of the square stepped loop, it will be noticed that the feed point is in the centre of one of the vertical sections and this is the best point for it. However, the bottom of the vertical section is a more convenient position and can be used if the maximum of vertical polarisation is not used. As the poles form a square they are in level with any of these methods at this location.

just as in any full wave antenna, there will be two current maximum points a half wave apart. In our case, at the feed point and in the opposite vertical section. On the second harmonic ($\times 2$ frequency). There are two wave lengths in the loop and four current maximums, one occurring in each vertical section. As higher harmonics are used, some current maximums will occur in the more or less horizontal parts of the loop, however, in all cases, four of the maximums will be in the vertical sections. This means the maximum of vertically polarised signal will occur in the lowest frequency bands and the least in the highest frequency bands, which is the way we would want it anyhow. If an ideal square shape is not possible at your location you can make do with two or even one vertical section and still gain some advantage. Remember that the feed point and the opposite part of the loop are always current maximums. Current maximums are located by measuring along the wire from the feed point and not across the ground, a good point to remember if your loop is not perfectly square.

The height of the vertical sections depends on your pole height and clearance from obstructions and also on how much vertical polarisation you want, there is no magic figure. If you use large vertical sections, the horizontal sections will, of course, be reduced in length and the loop will have a smaller enclosed area. Carried to extremes, this will reduce efficiency. For an 80 metre fundamental loop I suggest at least one metre and up to about three metres in each vertical section. Of course, the stepped loop will require somewhat less ground area which can be very useful in many cases.

To tune the loop, a dip meter reading is taken at the feed point and the most convenient pruning method is to change the length of the vertical sections slightly, leaving the horizontal sections and pole positions unchanged. Check not only the fundamental, but also the harmonics of interest, prune for best average results.

There are a number of options regarding feeding the loop. An open wire or 300 ohm feeder can be used with a balanced ATU. A 4:1 balun can be located at the feed point and then 50 ohm coaxial cable run to an ATU and the transceiver. Use a high power balun as the SWR may be fairly high on some bands.

Or the Antenna Matching Unit (AMU) described in *The Feeder Tuned Antenna* article in *Amateur Radio*, November 1985, could also be used.

The loop may be earthed at the mid-point of a balanced feeder system or at the mid-point of the vertical opposite the feed point. The above two methods give a balanced system but good results can also be obtained using unbalanced systems such as feeding the antenna with coaxial cable, the shield of which is earthed. The SWR will be much higher than with a 4:1 balun but most ATUs will manage it quite well. The balanced system is probably preferable but I have not been able to detect any difference in signal strength or received noise level with any of these methods at this location.

The poles used should preferably be wood or metal with added wooden tops so the vertical

sections are not parallel to and close to metal masts. I am using the latter but the wood sections are not long enough to accommodate all the vertical radiator section lengths so a short horizontal wooden arm has been added to the metal pole to space the bottom end of the vertical wire well away from the metal pole. I have used two egg insulators at the top and bottom of each vertical section of the antenna to support the loop.

I have been experimenting using this loop on 160 metres and getting promising results. On 160, the loop is a half wave long with a high impedance feed point and one current maximum opposite the feed point. The loop can be fed with one feed point earthed and the other connected to a random wire type ATU. As a current maximum occurs in the vertical section opposite the feed point, a fair amount of vertical polarisation occurs and although one side of the feed position is earthed, this carries very little RF current and no earth mat etc is needed. The best method I have used so far has been to series tune the loop with a capacitor and 1:1 balun in series then a 50 ohm coaxial cable to the transceiver. As I said, the results are quite good, both on receive and transmit and the system is well worth further investigation.

In conclusion, I am sure this stepped loop system is a good answer for those who need a good all-band antenna, horizontal loop antennas are worthy of much more attention than they presently receive. I would be interested to receive feedback re the stepped loop especially concerning its reduced noise pick up performance.

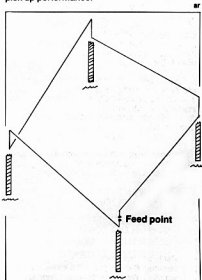


Figure 1 — Stepped Loop Antenna.

For simplicity sake tops of poles are not shown.

EMISSION MODES — What they mean

Peter O'Connell VK2EMU
3A Algernon Street, Oatley, NSW. 2223

Everyone knows (or should know) what AM, FM, CW, SSB etc means, but now emission modes are listed as a series of numbers and letters.

A look at page 115 of the recent Call Book lists the emission modes for the amateur radio service in groups of mixed numbers and letters. At first glance, the codes appear to be very complicated, but on a closer study it is easy to understand. Each code group has either seven or nine digits.

eg 6K00A2B, 4K00A3EKN, 36K0F3E, 11M0A3FMN.

The first thing we need to do is to split the code groups into two or three sub-groups. The seven digit codes are split into two sub-groups, while the nine digit codes are split into three sub-groups.

eg 6K00A2B 4K00A3EKN

The first sub-group contains four digits — three numbers and one letter.

eg 200H 6K00 6M25.

This sub-group gives details of the bandwidth of the mode. The only letters used in the amateur service are H, K and M; which stand for Hertz, Kilohertz and Megahertz and occupies the position of the decimal place.

eg 200H = 200Hz, 6K00 = 6kHz, 6M25 = 6.25MHz etc. (See Table 1 for full list).

The second sub-group contains three digits — two letters and one number.

eg A1A A3E H3C J3C

The first digit, a letter determines the type of modulation of the carrier.

A = Amplitude modulated carrier — double sideband.

H = Amplitude modulated carrier — single sideband full carrier.

J = Amplitude modulated carrier — single sideband suppressed carrier.

(See Table 2 for full list).

The second digit, a number determines the nature of the modulating signal.

1 = Single channel digital information without modulating sub-carrier.

3 = Single channel containing analogue information.

(See Table 3 for full list).

The third digit, a letter determines the type of information being transmitted.

A = Telegraphy — for aural reception.

C = Facsimile.

E = Telephony.

(See Table 4 for full list).

The last sub-group contains only two digits, both letters. This sub-group provides additional information to describe the mode.

eg KN MN NN.

The first letter defines details of the signal.
K = Sound of Commercial quality with the use of frequency inversion or band-splitting.

M = Monochrome (Television).

N = Colour (Television).

The second letter defines the nature of the multiplexing.

N = None (Amateurs are not permitted any multiplexing of signals).

So we can see that by looking at the appropriate tables, it is to determine the type of emission specified. I will work through a couple of examples.

Example 1: 8K00A3E

Bandwidth = 8 kHz

A = Amplitude modulated main carrier with double sidebands

3 = Single channel containing analogue information

E = Telephony

Therefore 8K00A3E = AM Voice Transmission with Bandwidth of 8 kHz.

Example 2: 36K0F3E

Bandwidth = 36 kHz

F = Frequency Modulated Carrier

3 = Single channel containing analogue information

E = Telephony

Therefore 36K0F3E = FM Voice Transmission with Bandwidth of 36 kHz.

Example 3: 30M0F3FMN

Bandwidth = 30 MHz

F = Frequency Modulated Carrier

3 = Single channel containing analogue information

F = Television (Video)

M = Monochrome (B & W)

N = No multiplexing

Therefore 30M0F3FMN = FM Black and White Television Signal with no multiplexing and Bandwidth of 30 MHz.

TABLE 1 — BANDWIDTH OF EMISSION

200H = 200 Hz; 1K12 = 1.12 kHz; 2K00 = 2.00 kHz; 3K00 = 3.00 kHz; 4K00 = 4.00 kHz; 6K00 = 6.00 kHz; 8K00 = 8.00 kHz; 16K0 = 16.0 kHz; 36K0 = 36.0 kHz; 750K = 750 kHz; 6M25 = 6.25 MHz; 11M0 = 11.0 MHz; 30M0 = 30.0 MHz.

TABLE 2 — FIRST SYMBOL: Type of modulation of the main carrier.

N Emission of an unmodulated carrier.

A Amplitude modulated carrier — double

sideband.

H Amplitude modulated carrier — single sideband full carrier.

R Amplitude modulated carrier — single sideband with reduced or variable level carrier.

J Amplitude modulated carrier — single sideband with suppressed carrier.

B Amplitude modulated carrier — independent sideband.

C Amplitude modulated carrier — vestigial sideband.

F Angle modulated carrier — frequency modulation.

G Angle modulated carrier — phase modulation.

P Series of pulses — no modulation.

K Series of pulses — modulation in amplitude.

L Series of pulses — modulation in width/ duration.

M Series of pulses — modulated in position/ phase.

TABLE 3 — SECOND SYMBOL: Type of signal modulating the main carrier.

0 No modulating signal.

1 A single channel containing quantised or digital information without the use of as modulating sub-carrier.

2 A single channel containing quantised or digital information with the use of a modulating sub-carrier.

3 A single channel containing analogue information.

8 Two or more channels containing analogue information.

TABLE 4 — THIRD SYMBOL: Type of information to be transmitted.

N No information transmitted.

A Telegraphy — for aural reception.

B Telegraphy — for automatic reception.

C Facsimile.

D Data transmission, telemetry, telecommand.

E Telephony.

F Telegraphy.

W Combination of the above.

TABLE 5 — LAST SUB-GROUP: Additional information.

KN Sound of commercial quality with the use of frequency inversion or band-splitting — with no multiplexing.

MM Monochrome (Television) — with no multiplexing.

NN Colour (Television) — with no multiplexing.

NOTE: The lists above only include mainly information pertaining to the amateur radio service.

PUBLICATION OF COMPUTER PROGRAMS

Part of the technical editing of computer programs involves running the program. This has meant re-typing it from a listing supplied from the author. Many hours are spent by the editors entering the program, especially if, as does often occur, syntactical errors are introduced.

In future, to overcome this hold-up, alternative forms of program entry may be required, eg cassette, disk or via a modem. This will

enable quick editing. If we do require the program in one of these alternative forms, we will provide the blank cassette, disc, etc or make the telephone call in the case of modems.

Finally, a word of advice. Computer programs on their own do not make good articles. Please include with any program a description of your algorithm. Articles are much more interesting when they include, not just a description of the how but also the why.

STABLE VFO WITH DIGITAL READ-OUT

Morris Odell VK3DOC

84 Hill Road, North Balwyn, Vic. 3104

Morris has been very satisfied with his home-brewed VFO for a number of years and the February editorial inspired him to take the time to share it with the readers of Amateur Radio.

This design for a stable VFO is an old one, used by the writer for many years. It may not be as sophisticated as modern designs but it performs well and has been used for a long time at the head of a 18X multiplier for two metres with excellent long-term stability. The frequency readout is also old-fashioned by today's standards, but has the advantage, in my case, of being built from junk-box components and thus cost virtually nothing.

The construction of a good VFO is a demanding bit of home-brewing, requiring more care and attention to detail than most other projects. Of course, the satisfaction resulting from a successful project is a great reward and has to be experienced to be believed.

DESIGN CONSIDERATIONS

Any VFO must be constructed according to a few basic principles in order to get maximum performance in terms of frequency stability and spectral purity. The following are a few points that will be found useful:

- * The frequency determining elements of the oscillator must be kept as free as possible from variation due to thermal factors. In practice, this means avoiding ferrite cores, plastic capacitors and varactor tuning. PCBs should be single-sided and of high quality. Tuning capacitors are definitely not the place to economise, they should be the best available and made of Invar if possible, with ceramic insulation. Such capacitors are not easy to find but are worth searching for. The advertisements in *British* and *US* magazines are worth searching as a starting point. Coil formers should be ceramic and silver plated coils and capacitors from disposals sources are often of excellent quality.

- * Mechanical rigidity is just as important. The VFO should be mounted in a sealed diecast box, preferably on a heavy chassis and with good quality dial drive mechanism.

Again, these are not easy to find but are worth the search. Wiring of the tuned circuit should be in heavy copper wire, keeping lead lengths as short as possible and using ceramic stand-off insulators if required.

- * The VFO should be well away from heat producing gear such as transmitters. Some commercial designs even have it in a thermostatically controlled box, but unless you are rather obsessive, this is going to be a bit far (although surprisingly easy to do).

- * The power supply to the oscillator should be regulated and as stable as possible. The use of batteries is not as impractical as it sounds.

- * The oscillator should be operated at as low and stable a power level as possible to avoid thermal effects in the tuned network. The active device(s) should load the tuned circuit as little as possible and should be isolated from it also to avoid unpredictable detuning effects. The loaded Q of the frequency determining network must be as high as possible. Low L/C ratios can help here.

- * The oscillator should be followed by one or more buffer stages in order to keep its operating conditions stable. These can be untuned but some form of bandpass characteristics is usually incorporated (in the later stages at least).

- * While digital frequency readout is an attractive feature, bear in mind that digital circuitry is a potent noise source. The readout logic should be in a well shielded enclosure and supplied with DC from a separate source. If the VFO is being used for a sensitive receiver, it should be possible to turn off the digital circuitry while searching for very weak signals. The signal for the frequency counter should be taken from a point in the buffer chain as far along as possible from the actual oscillator.

THE VFO CIRCUIT

This VFO was built to cover the range 7.460 to 7.571MHz. I used a disposals Command transmitter as the chassis as the Command's tuning circuitry includes most of the features mentioned above. The tuned circuit is in a sealed box and is connected by a short piece of heavy gauge copper wire to the oscillator circuit in another sealed box. The iron dust slug in the original coil has been removed but the padding and trimming capacitors retained to adjust the

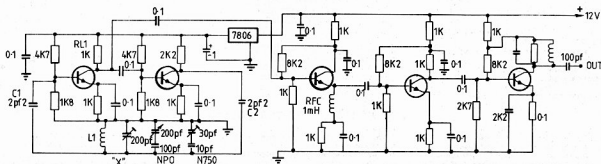
tuning range. A small N750 ceramic capacitor has been included with an air-trimmer to couple it to the tuned circuit for fine adjustment of temperature drift. The VFO is battery operated, and a couple of lantern size batteries last for over 100 hours.

The oscillator circuit I have used is the Franklin oscillator. This was quite popular in the days of valves as it is well suited to their input characteristics. I have found it to work well with bipolar transistors and have no reason to doubt its performance with FETs also. The circuit is basically a two stage amplifier with positive feedback arranged to include a loosely coupled tuned circuit. Although the circuit resembles a cross coupled stable, it will not work in this mode as the loop gain is too low. It is the Q of the tuning network that lifts the loop gain to the point of oscillation at the desired frequency only. In practice, the capacitors C1 and C2 should be of the same value and as low as possible consistent with sustained oscillation and reliable starting. I have found values of one or two pica-farad to be optimal and the amplifier gain can be adjusted by varying RL1 (not with a pot!) to suit. Because of the low loading of the tuned circuit, point X is at high impedance and should be treated accordingly.

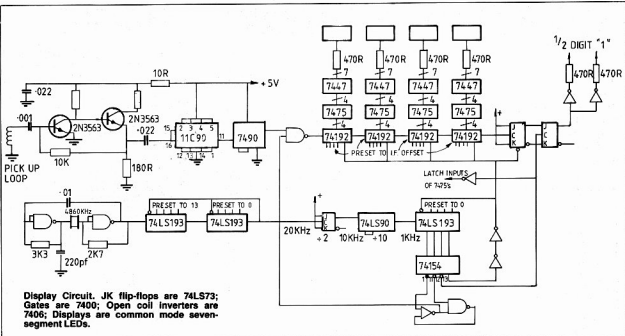
I have always tended to use low impedance practice with transistorised Franklin oscillators mainly in order to swamp any variation in device characteristics. It also reduces the likelihood of parasitic oscillations. Oscillator output is taken from the intermediate coupling point via an emitter (or source) follower and then through a two-stage buffer. This arrangement is open to change to suit a particular need. The tank for the final stage is a small air-wound coil in my VFO, but a ferrite toroid would also be suitable here.

THE FREQUENCY COUNTER

Because the VFO is used with a multiplier, there is no point in measuring its output frequency directly. Output was taken from the final multiplier via a small loop and preamplifier and then fed to a divide by 100 prescaler. The counter proper is a straight-forward design using TTL logic. The counter chain uses presetttable counters in order to enter IF shifts for receive operation. The final half-digit is counted with a JK flip-flop, the other FF in the package serving as a latch. Count time is 10 milliseconds and the data is then latched into



VFO Circuit. All transistors are 2N3563.



Display Circuit. JK flip-flops are 74LS73; Gates are 7400; Open coil inverters are 7406; Displays are common mode seven-segment LEDs.

the display. Timing is derived from a junk-box crystal on 4.860MHz, which is divided by 243 to give 20KHz and then by 20 to 1KHz for the control section. The display updates at about 70Hz and is therefore flicker free.

PERFORMANCE

The VFO has been checked against a properly warmed-up Hewlett Packard 524B counter and was found to vary less than 5Hz over 12 hours

of continuous operation at 7.500MHz. The stability of my clock crystal in the frequency counter was not as good as this, although variation was not seen on the display because the short counting time gave only 100Hz resolution.

Harmonics were not able to be measured directly due to lack of suitable equipment, but were well down when tuned in on a communi-

cations receiver up to 30MHz.

This article is intended more as a guideline than a specific constructional project. Armed with the basics, construction of high quality home-brew VFOs is a lot of fun and very rewarding and I hope anyone attempting it will get as much enjoyment from it as I have.

REFERENCE: *Solid State Design for the Radio Amateur*. ARRL 1977.

AR

SEEING HALLEY'S COMET THE SECOND TIME

Further to the article Halley's Comet - will we see it? (p5 April AR), it was requested that if anyone reading the article and seeing the Comet for the second time, to please contact the writer. Four readers of AR did and their letters are reproduced in part.

The first was from Mrs C R Ferris and reads — "I am the mother of VK3BUN and seeing your note in *Amateur Radio* re Halley's Comet prompted me to write.

"I saw Halley's Comet in 1910 and twice this time, once when the tail was not visible in the north and this time when the tail is visible in the eastern sky.

"As far as I can remember in 1910, the tail was finer, more like a cats tail."

The second report was from Lindsay VK2EI, "... I observed Halley's Comet in 1910, practically every day from the time it appeared until it disappeared.

"I was in the country at the time and in those days there was no electric lights and no pollution, as cars at that time were a novelty, also I had better eyesight as I was 15 years of age. I am now 81, so you could say I am getting on in years.

"Halley's was certainly worth seeing in 1910, it kept getting bigger and brighter each morning before daylight, until it changed over to the night sky. It was then at its best with the head a few degrees above the horizon and the three tails, yes definitely three, reaching up to the zenith.

"I have seen the Comet this time with binoculars, and I must say that it is very disappointing. I have my camera ready hoping to

get a picture of it.

"I also viewed quite a large Comet in either 1900 or 1901, but no one seems to know about it ...

The third letter came from Frank VK3FC and reads "... I have had a small telescope for years, given to me by the kids and on this return of the Comet, it has come in handy.

"I found that the sighting did not work out quite as anticipated by the prediction. Before the last phases of the moon, in March, I could pick it up by ordinary eyesight and at a nice angle at 5 am. From about 6th of April and onwards it has got weaker and much harder to locate contrary to expectations.

"I have hazy recollections of seeing it in 1910 as a kid of seven years of age, the big awesome thing in the sky. This was at Clunes in Victoria. Of course, I am 82 years of age ..."

The fourth letter is from Ray VK3RJ. Ray comments: "I had the loan of a fairly good pair of binoculars from 18th to 27th April, but due to a frustrating sequence of overcast night skies, I was afraid I was going to miss out. However, on 24th, the night sky was absolutely clear and enabled me to locate the constellation CORVUS and the Comet. I also had a splendid view of the eclipse of the moon.

"The Comet sighting was not a patch as a spectacle, on the sightings (four) I had witnessed with the naked eye as a boy of 10 years of age, from Maryborough (Vic) in 1910. The Comet was then side-on and three times closer to the earth.

"So, I have joined the fortunate minority who have witnessed two orbits.

"Thank you one and all for your contributions to my request and if someone reading this can assist Lindsay, it would be appreciated if they could contact him direct at his OTHR.

Contributed by Ken McLachlan VK3AH

NEWS FROM FRANCE

The Réseau des Emetteurs Français, via F8BO, advises the following change of address for the French QSL Bureau.

Cards should be sent to REF QSL, BP 273, F-81209, Mazamet, Cedex.

Call signs in France are TK; FG; FH; FK; FM; FO; FP; FR; FY and FT. Radio clubs are issued with FF prefixes.

Numerals are designated in licence class — 1 for Class A; 2 for Class B; 3 for Class C; 4 for Class D and 5 for Class E.

Class A licensees may use 144MHz phone and 20 watts; B may use 28.400-29.000MHz and 144MHz phone with 20 watts and 20 watts CW on 7.020-7.040, 14.050-14.100, 21.050-21.150, 28.000-28.100 and 144.050-144.090MHz.

Class C may use 144MHz and 100 watts whilst Class D may use 100 watts CW on all bands, all modes. Class E can use 250 watts, all bands, all modes.

BUT IS IT STEREO?

The Victorian Consumer Affairs Ministry has been concerned about the public buying radios and wrongly thinking they will receive AM-sterero broadcasts.

It has been found that many radios labelled 'AM/STEREO FM' were bought on the assumption that both AM and FM stereo reception was available.

Consumers need to be very careful and make sure that they are getting what they want.

The Ministry has been negotiating with manufacturers and retailers to see if a much clearer way of labelling is possible. One suggestion was that radios able to receive both AM and FM stereo be labelled 'STEREO AM/FM' and those receiving FM stereo only be marked 'AM WITH FM STEREO'.

HOME-BREW EXTERNAL VFO FOR FT 707

Ray Dobson VK5DI
16 Howden Road, Fulham, SA. 5024

A slow response to a request for information about a ready made VFO and two recent articles in magazines prompted this writer to attempt to make his own.

A careful and detailed study of the relevant circuit diagrams of the FT-707 revealed the "trade secret" of the external VFO switching, namely, the unmarked switch near the EXT VFO socket on the FT-707 connection diagram which is operated automatically when the EXT VFO plug is plugged in. This switch cannot be operated manually — it is operated only when the EXT VFO is plugged in for use. Unplug the EXT VFO and the transceiver reverts to single (internal) VFO operation only. (see Figure 5).

A study of the circuit diagram of the FV-107 (internal VFO for the FT-107) revealed how the INT/EXT VFO, TX/RX, CLARIFIER, etc switching was carried out.

The VFO (5.0 to 5.5 MHz) circuit used is shown in Figure 1 and is virtually a copy of the internal VFO of the FT-707 — the only difference being the provision of the +8V for the switching via the INT/EXT switch to enable either the EXT VFO, or the INT VFO via a return to Pin 5 of the EXT VFO socket (this +8V is disconnected from Pin 5 when the "trade secret" switch operated).

The art work for the PCB, viewed from the component side, is shown actual size in Figure 2.

The component layout is shown in Figure 3. This layout and associated PCB is not critical and variations can be made to accommodate the different sizes and shapes of the components that come to hand.

The control circuitry is shown in Figure 4 and as stated above was adapted from the FV-107 circuit diagram.

The numerous capacitors of various types in the oscillator tuned circuit area may be questioned. However, although they are not absolutely necessary, they are there for some very good reasons, eg temperature compensation, frequency range, linearity, etc. The sum of these capacitors is variable from

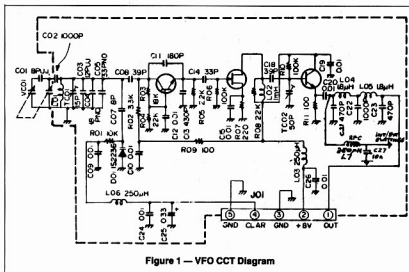


Figure 1 — VFO CCT Diagram

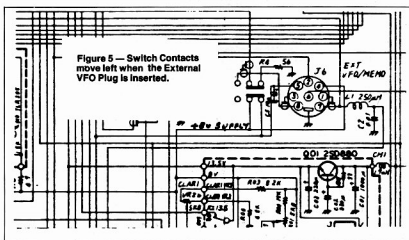


Figure 5 — Switch Contacts move left when the External VFO Plug is inserted.



Figure 2 — Printed Circuit Board viewed from the component side.

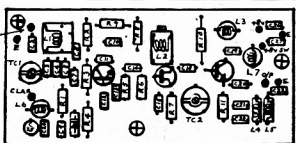


Figure 3 — Component Layout.

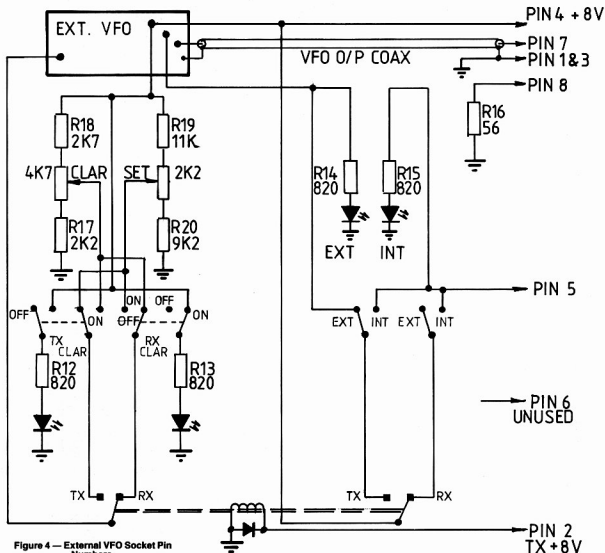


Figure 4 — External VFO Socket Pin Numbers.

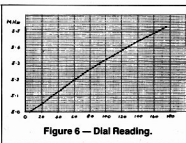


Figure 6 — Dial Reading.

close. Due to the capacitor and coil variations the usual adjustment of the trimmer capacitor and the ferrite slug must be carried out to achieve the desired coverage.

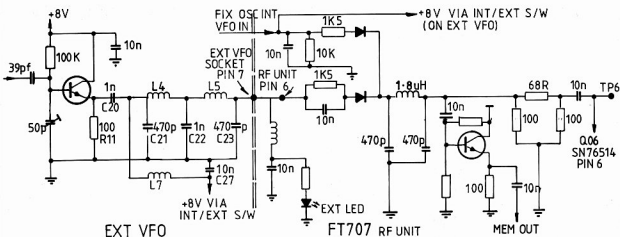
The operation of the external and internal VFOs with the FT-707 circuitry is shown in Figure 7.

PARTS LIST

Capacitors (pF)
1 8 C1 #
1 8 C7 #
1 12 C3 #
1 16 C4 #
2 33 C5 #, 14
2 39 C8, 18
1 180 C11
1 430 C13
2 470 C21, 23
2 1n C2, 22

9 10n C9, 10, 12, 15, 19, 20, 24, 26, 27
1 .33uF (tant) C25
1 Varicap*
1 15pF trimmer TC1
1 50pF trimmer TC2
1 15 x 15pF tuning VC1 + VC2

Resistors (Ω)
1 56 R16
2 100 R9, 11
1 220 R7
4 820 R12, 13, 14, 15
3 2k2 R5, 8, 17*
1 2k7 R18*
1 3k3 R2
1 9k2 R20*
1 10k R1
1 11k R19*
1 18k R3
1 22k R4
2 100k R6, 10
1 2k2 pot*



- | | | | | | |
|------------------------|--|----------|---|----------|---|
| 1 | 4k7 pot* | 2 | RFC 1.8μH L4, L5 | 1 | Metal Box (preferably cast-Aluminium) |
| Semi-Conductors | | 3 | RFC 250μH (not critical < 390μH) L3, L6, L7 | 1 | Relay (2-pole change-over) |
| 1 | 2SK19GR (MPF 102, BC245, or similar FET) | 1 | RFC 1mH L2 | 2 | Switch (1-pole change-over) |
| 2 | 2SC1815Y (BFX20, BC548, or similar NPN) | — | Value depends upon how much Clarifier action is required. | 2 | Switch (2-pole change-over) |
| 4 | LEDs | # | Temperature Coefficient chosen for frequency stability | 1 | Slow-motion Dial |
| Inductors | | 1 | 8-pin Yaesu Plug (for EXT VFO socket) | 1 | Knob for Clarifier control |
| 1 | One Coil L1, 5mm ID x 25mm (36t 0.50μH wire) | | | | Coaxial Cable, Cable, Wire, Tag Strips, etc. |

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- HL-66V 10-60W 6m, GaAsFET rx \$269
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- HL-2K 2kW i/p, 160-10m, 2 x 3-500Zs \$2150
- HC-200 ant tuner, 3 pos sw, SWR, pwr \$249
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NORFOLK ISLAND — a DXer's Delight

Phil Connolly VK2BPC
PO Box 104, Toronto, NSW. 2283

With the question in our minds as to where to go for our forth-coming annual holidays, the thought occurred to my wife and I that maybe some far-flung green fields might be interesting. After all, it was many years since any extensive holiday had been undertaken, and some exotic overseas port seemed to be calling!

The VK2BPC Portable QRP Station.

After initial inquiries at the local tourist bureau, we quickly came to the realisation, that with the state of the Australian Dollar, it was almost prohibitive for the average family with three children to travel overseas and still live in peace with ones bank manager.

The alternatives didn't seem to have the same glamour about them until Norfolk Island came into the conversation. After all, it had been almost 15 years since we had been there and the children had never been. Another benefit was the fact that it was a domestic flight, which would make it cheaper for family travel. It was also my wife's homeland of childhood days so it would be interesting to catch up with all the relatives, friends and acquaintances, and see how things had changed since 1971. There was also one other thing (for me as a keen amateur) to help swing the vote in favour of Norfolk — the DX location!

So, the location has been decided, enter the next problem. How do you decide what to take on an aircraft in the form of radio equipment, when carrying luggage for five? Well, after much deliberation, it was finally decided that any fool could work the world with 100 watts plus and a VK9-prefix, so why not do it the hard way on QRP? With loving care the trusty little 10 watts, SS105S was packed, along with a 40 metre dipole, ATU, desk microphone, CW key, six amp power supply and sundry bits and pieces.

Just two and a half hours out of Sydney on a comfortable Fokker F28 jet, (A far cry from the five hour flight on the old DC4 Skymaster), we were preparing for touch-down onto the familiar volcanic soil once again, whilst attempting to show the children some landmarks we recognised.

Once through Customs we were met by Uncle-in-law, who whisked family and luggage away in an old Volvo, to our shack which would be home for the next four-weeks. Of course, (in true amateur spirit) upon entering the drive-way, I couldn't help surveying the local flora in an effort to gauge the height of the Norfolk Island Pines surrounding the house. One little beauty just outside the shack window, that rose to about a height of about 25 metres could most surely be the hanger for the 40 metre dipole — but that would have to wait until we had been to the local shop to stock up the larder: even amateurs have to eat!

There had been some speculation from amateur friends back at my home QTH as to how long it would take for me to get on air. Well, on

arriving back from the shop it was straight to the most important business and up the tree, to hang the centre of the dipole at about 18 metres and form it into an inverted vee. (If you like climbing trees I can certainly recommend the Norfolk Pine! It seems to have been designed specifically with amateurs in mind, as its branches are spaced just right for climbing, and it is very sturdy, into the bargain, which allows little or no swaying in the breeze).

Once inside the shack again with the gear ready to switch on, I thought I would try 15 metres as it was about the right time of day. Upon tuning around the band, the familiar sound of JAs seemed to be present so I decided to call one and test the effectiveness of the equipment. What I was about to experience will always be remembered! A VK2 call sign is not exactly a most sought after DX call and momentarily I had forgotten the significance of my location. After having successfully worked a couple of JAs, and within a very short period of time, it seemed as if half of Japan was trying to work me, all at once. I was suddenly on the receiving end of a pile-up. All



John VK9JA and his wife Florence.

was working well and reports on 15 metres were 5x3 to 5x7 — not too bad for low power, but a quick burst on 40 metres soon confirmed that I might make a contact back home on my first night — which did happen.

Of course, the trip was not all amateur as the family had to be considered too, so the DX work was confined mainly to the evenings when we were not going visiting, etc. As well as our own luggage, we were persuaded to take about 10 kg of QSL cards by the VK2 QSL Bureau, and one of the more interesting parts of the trip was meeting the recipients of these cards. Memories will long remain of the time spent with Bob VK9ND, Les VK9NI, John VK9JA, John VK9NJ, and all their wives. VK9NJ may be better known as VK2ANO, as John and his wife had decided to spend a holiday there at the same time as we had.

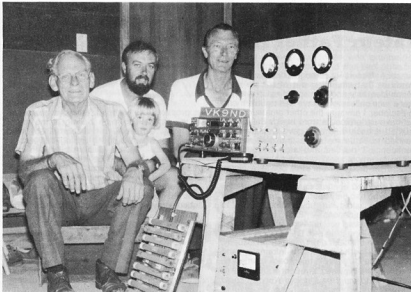
The shack of Bob VK9ND, was very popular with the DX-chasers, particularly when he and John VK9NJ were working two different bands — Bob on a TSS20S and 20 metres, whilst John was on a TS830S and linear on 40 metres, downstairs in the garage. The linear was a home-brew variety, made by Bob, a most professional looking piece of equipment and a real credit to its creator. The time spent with Les VK9NI and his wife Jean was very pleasant in their beautiful garden surroundings, and it was nice catching up with the people who had previously only been voices at the other end of a QSO.

If you think these people have it made living in a little 15 square mile Pacific DX Paradise, you are right! It certainly is a nice place to live.

Another face to visit was John VK9JA, the call sign of the longest standing amateur on the island, and a longtime friend of my wife's family.



Les VK9NI and his wife Jean.



From left: Bob VK9ND, Phil VK2BPC with third harmonic, and John VK9NJ. Bob's new home-brew linear and power supply feature in the centre of the photograph, with the dummy load at the bottom centre.

me as the Westlakes Amateur Radio Club, of which I am a member, was the first amateur radio club to become involved in an application for a community radio station licence.

Well, could I recommend a holiday on the magnificent island to a DX chaser? The answer is most definitely yes as not only will you have a great time on-air, but you will also meet a lot of interesting and friendly people and be able to catch up on a lot of Australian and Norfolk history. You may even find an odd bargain with the duty-free shopping!

With the holiday finished, a quick tally of the log indicated that 31 countries were worked, which was not bad for low power, dipole and spasmodic operation on 40 and 15 metres during a propagation low. Probably the /VK9N had something to do with it!

Of just as much interest as the DX to me though were the regular scheds to my many amateur friends back home who were enduring the hot Australian summer across the water.



QSP

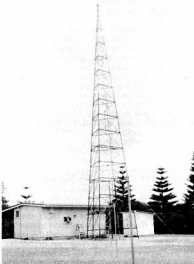
ONLY NATIONAL UHF NETWORK

On 16th March 1986, SBS-TV became the Australia's first national UHF television network, which opened a new chapter of broadcasting in this country.

The date marked the network's expansion to Perth and Hobart, via AUSSAT, making SBS-TV accessible in all capital cities except Darwin. The signal will be transmitted across the metropolitan area in both cities on UHF, from a transmitter atop Mount Wellington in Hobart, and Mount Bickley in Perth. All programs will originate from Sydney.

It also launched a new line-up of programs including award-winning international films, excellent series and major new local productions.

Viewers in all areas have access to the network's Sydney studios via a national toll-free telephone number (008) 22 6322, costing only a local call fee.



This Ionospheric Receiving Station is one in the Australian Network and is located on Norfolk Island.

John admits to not being very active these days, but he can be heard each day at 2100 UTC, 14.315 MHz, on the Maritime Mobile Net, giving much appreciated weather details to the many yachtsmen who call in. John's time is mostly taken up with his two electronics shops, and showing films on the history of Norfolk and Pitcairn to the tourists, not to mention his activity with the Norfolk wildlife conservation program.

Being the VK2 QSL Bureau Manager gave me cause to discuss the problems faced by our VK9 friends with the constant flow of cards that make their way to them. We have to realise that these people are in a very sought-after DX location, (as I experienced, first hand), and to expect a return card to a VK2 or VK3 etc, via the bureau, without making arrangements during the QSO is asking a lot of them. Where as we have a hundred, or

possibly two hundred cards pass through the system, the VK9s could count them in thousands, so it becomes a very expensive business for them. If you are after a card, why not use the general rule of rare DX locations and pop an IRC in with your card. I can assure you of a good return service. As can be appreciated, few, if any, VK9s really need a mainland VK card, but almost all are prepared to QSL with a little help.

Unfortunately, Jim and Kirsty, VK9NS and VK9NL, were away in New Guinea at the time of our holiday so we were not able to meet this time — hopefully next time!

With so many places to see and so many people to meet, it certainly didn't take long for the four weeks to pass, but I did manage to visit the local radio station. Broadcasting takes place from a small studio, not far from the main shopping area and goes to air on 93.900 MHz FM and 1.566 MHz AM (although the AM broadcast was temporarily suspended whilst a new AM stereo transmitter was being installed). This was of great interest to



The VL2NI Broadcast Studio with Kathy Leccren at the Controls.

AMATEUR RADIO IS CONTAGIOUS

A tribute to an Amateur Father from an Amateur Son

Some may think amateur radio a strange hobby for a grown man, as it must surely be easier to talk to friends over the telephone instead of twiddling all those knobs and things, but there must be something to it as son follows father into the hobby.

I guess I first became interested in amateur radio about six years ago. Whilst visiting my father, George Humphrey VK2NO, one winter afternoon, he asked me to climb onto the roof of the house and snip a quarter of an inch off each end of a piece of wire, called all things *a Dipole*. He explained that this would eventually reduce his SWR down to One to One on the meter in *The Shack*. It seemed like a simple job and, although a stiff August westerly wind was blowing, it would only take a minute or two to finish.

During the next half-hour, alone in the wind on the roof, interrupted only by Dad calling out "Cut another quarter of an inch off each end of the antenna, mate, it's still a bit high" — I got to wondering "what the devil is a Dipole, an SWR, what is the complicated mathematical equation of One to One, and why does he insist on calling the third bedroom *The Shack*." I recalled thinking some 30 years ago, as a teenager during one of Dad's on-air sessions, that amateur radio was a strange hobby for a grown man and why didn't he just speak to his friends over the telephone instead of fiddling around with all that equipment and twisting all those knobs. This line of thought was interrupted by Dad calling out, "Come on down, mate, it's one-to-one."

So, when I descended from the roof (after clipping little bits of copper wire from a thing that looked like an old fashioned clothes-line), I entered the third bedroom — sorry, the shack — where, I might add, it was warm and without a trace of the cold wind which had been my companion on the roof. I asked Dad to explain to me what enjoyment amateur radio gave him and why hadn't he become bored with a hobby that he had been active in since 1928.

Over the next hour, or so, I very slowly began to understand a little of the enjoyment he derived from his hobby and the meaning of words like Dipole, SWR, and One to One — the spark of interest was ignited. As the days went by other terms were explained like Wave Lengths, Ground Plane, Yagi, Capacitor, Diode, QSO, QSL, DX, CW, RTTY, AM, FM and Sideband.

I sat in the shack and listened with a new interest to Dad talk to friends he had had for over 50 years and to those new friends that had only just gained their licence. When Dad's mates called in for a visit I joined them and listened when they were second operators talking to distant friends in a Net — and my interest was becoming very keen.

During one of his QSOs, Dad said, "I'll hand you over to my second operator." I had a quick look around the shack, there was only Dad and I — Gee, I'd love to have a talk, I thought! When I positioned myself in front of the microphone I discovered another new phrase — *Mic Fright*. My mouth became as dry as the

Simpson Desert at drought time, with the words at first stumbling out at a very slow, unconfident rate and then speeding up to a rate that a race caller would have had trouble trying to decipher. I am sure the other amateur would not have understood a word I said. But when I handed it back to him, it gave Dad the time needed to settle me down and give me the confidence I needed and after a couple of overs the whole session became most enjoyable, even though it did start out as a *Nerve Wrecker*.

My very next contact was with a brand-new Novice who had only been on-air for a couple of days and I asked him how difficult it was to pass the examinations — "Easy" he said, "Just a bit of study and your in like Flynn" — (not all amateurs tell the truth *AL*, the name).

Based on this *Just a Bit of Study* philosophy, I sent away for the appropriate information and study guides. A week later back came the paper-work. I browsed through it and said to Dad — "You must be kidding! Nobody could study all that information and pass an exam in less than 10 years!" But, in his own special way, he convinced me to have a go at the easy part first and if I could learn the Regulations and five words-per-minute Morse send and receive, then we could worry about the theory-side of things a bit later. I took some convincing but eventually agreed with Dad, as the Regulations were not all that hard as they were really based on common sense, and as Dad had already put in several hours of explanation, I felt I should at least try.

We put all the information we could onto a cassette and whenever driving I continually played it on the car cassette over the next couple of weeks. It slowly sank into my memory, so, back to Dad I went to ask him to test me. To my surprise I had remembered most of the answers!

The spark of interest wanted to grow into a little flame. "What's next?" I asked. "Easy" Dad replied "Have a crack at the Morse, all you have to remember is the symbols for 26 letters and 10 numbers — that's only 36 things all told and that is a lot less than the Regulations." It crossed my mind that the Novice that had told me "Just a bit of study and your in like Flynn" would have summed up the learning of the Morse code in the same simplified way, but no, I must be wrong, it sounded easy enough. "Okay Dad, I'll go home and learn them all tonight!"

After a couple of hours study I went to bed and at breakfast next morning, lo and behold, some of the symbols had lodged themselves in my brain! D = E and Dah = T — only 34 to go. This was harder than a second language and I now thought the *in like Flynn* man was definitely working in collusion with Dad!

A couple of weeks later, when I did know all the symbols, Dad tuned in the WIA Stew Morse Session on 80 metres, saying it would help me. He then lent me his old Swan 350 and we set up his listening station at my home. For weeks on end I tuned into every Morse session that the WIA put to air.

It was about this time that both my wife and my mother thought that Dad and I had taken leave of our senses as we talked to each other in Morse and the Q-code.

I bought a cheap key and we built a buzzer into a cigar box and began sending and receiving sessions. We also made tapes to listen to on the car cassette. I told Dad of one occasion of sitting at the traffic lights listening to the symbols and saying out loud the

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appropriate letter when I noticed a passenger in the car next to mine looking at me rather strangely. I was a bit embarrassed, then thought it may be better, during this kind of practice, to keep the windows closed in case someone overhearing be might think it their duty to throw a net over me!

I passed the Regulations and send and receive Morse examinations and six months later managed to pass the Novice theory. The letter came in the morning mail advising me that at last I was a Novice! I rushed into town and picked up my call sign, VK2PVG (I was not going to wait around in case they found that they had made a mistake or, who knows, they may even run out of call signs!).

Armed with the receipt and my call sign it was home to collect my wife and off to tell Dad. I thought that I was happy but he was jubilant. That night I went on-air in my own rite and my first QSO was with Dad. We were like a couple of kids — full of excitement. Boy, that first QSO with your own call sign is something you can never forget.

I had also managed to pass the 10 WPM Morse exam on the day I had passed the Novice theory so all that remained was the AOCPP theory examination, and on reading the various theory books, it looked like *The Impossible Dream*. However, Dad reminded me of what the Novice had told me over a year ago and the study began again. With only a meagre two or three hours study every day for a year I managed to gain the AOCPP with a new call VK2END. I was very happy and relieved, but Dad was even more jubilant than when I had gained Novice status. Again, my first QSO with my new call was with Dad. The next day we sat around and Dad talked of the *Old Days* when he had been an operator, as part of the Waverley Radio Club, of the Mosman Experimental Wireless Station VK2NE (Nelson Eddy) and of how he and his old mate Hughie (now VK2ZAM), would broadcast records and birthday calls on the frequency of radio station 2SM, when the commercial station closed at midnight on Saturday nights, and the early hours of Sunday morning. The first broadcast was in September 1934, all carried out on mostly home-brew equipment, and was broadcast not only to local listeners, but to the DX Club of New Zealand who arranged to listen to the broadcast. This was the first time an experimental station in Australia had ever attempted a broadcast of this nature. He talked of working as an operator in the theatre and of his job with Western Electric wiring theatres, like the Lyceum, in the city and many suburban and country theatres, for sound when *Talkies* were introduced. Of how, after the war, he changed his call sign to VK2AKM (Australian Kilo Watt — Dad's own phonetics) and how he changed this to VK2NO (Nancy Ocean) to honour his old friend Don Nett, the original holder of the call sign, whom Dad had known since Don had arrived in Australia as a ship's operator. Don had passed away and Dad thought that it would be a good way to keep the flag flying for Don. Many new contacts would tell Dad about Don, and Dad would always tell them something extra that he would recall, and in this way Dad honoured the memory of his old mate.

In 1973, as reported in the press, during a QSO between Dad and a close friend, Horrie

Oaks VK2FA a breaker, who had hastily set-up his rig at the Riverina Advanced College of Education, asked if he could introduce a special visitor. The visitor happened to be HRH Prince Philip. The Duke of Edinburgh, who was visiting the college to present awards, and as his interest in radio is well-known, an amateur station was set-up for him. Dad recalled, "We had quite a chat with the Duke, he was very keen on the history of amateur radio in Australia and passed on his good wishes through Horrie and myself to operators in this country."

On another occasion, also reported in the press, during a Telecom industrial dispute, the Royal Hobart Hospital was unable to contact the Medical Application Centre, in Gladesville, Sydney, for spare parts for a Gamma camera used in the Nuclear Medical Department. A faulty relay switch made the unit unserviceable

and as a result of the dispute telegrams and a telex did not arrive. A strong signal from VK2NQ was heard by Mr Allen O'Halloran, the Head Technician of the Hospital, who was also an amateur, VK7OH. After permission to help from the various authorities was granted, a section of the 20 metre band was kept open by other amateurs until contact was made with the centre at Gladesville and the spare part was sent, post haste, via Mascot, and in a short time the Gamma camera was back in operation.

About this time I went, as Dad put it, *Key Crazy* and a very large percentage of my QSOs were on CW and as Dad was a *Phone Man* I asked him why he didn't use CW. "Son, the first licence I held was restricted to working CW-only for six or 12 months and, at the end of that time, after the PMG's Department sighted my log, I was allowed to use phone. That afternoon

I borrowed a row boat from a fisherman friend at Mosman Bay and rowed out into the middle of the harbour and dropped the Morse Key to the bottom where it belonged — but if ever I do decide to take up brass pounding again, and need a key in a hurry, I know exactly where I put it!"

During last year, Dad introduced me to two metres and we enjoyed many QSOs while I was mobile at work and I met many of his mates who were restricted to these particular frequencies. It is a whole different style of amateur radio, but just as enjoyable.

On 18th March 1986, my Dad, George Humphrey VK2NO, went *Silent Key*; I know I will surely miss him and I met many of his friends will too. I hope to keep Dad's call sign active and *Keep the Flag Flying* in honour of both Dad and Don.

Steve Mahony VK5AIM

19 Kentish Road, Elizabeth Downs, SA. 5113

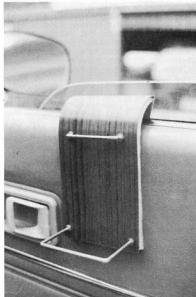
MOBILE MOUNTING BRACKET FOR A HAND-HELD TRANSCEIVER IN A VEHICLE

Having purchased a two-metre FM hand-held transceiver, and used it in the car I decided some form of Mounting Bracket was required. An inspection of an electronics brochure showed such a bracket was available. Further investigation at the local electronics store revealed a plastic variety which was deemed to cost more than it was worth.

A little thinking and a few practice cuts and bends with a piece of cardboard from a cereal packet, soon indicated the necessary shape.

The final bracket was made from a piece of brown covered Marvplate which matched the vehicle trim admirably.

The strip of metal is 220 mm long by 78 mm wide (or cut to suit a particular unit's dimensions). It is necessary for the curve of the top hook to match the internal contours of the car door — see photographs.



The bracket slips down between the window. The top bar accommodates the belt-clip of the hand-held whilst the bottom one steadies the unit.

Line the back of the metal with a piece of thin foam plastic to protect the door panel. The top bar is made of 1/4 inch (3 mm) diameter brazing rod, threaded with a 1/4 inch (3 mm) Whitworth thread, to secure the nuts for holding the rod in place. The width of this bar is adapted to suit the belt-clip of the hand-held.

The lower support bar is also 1/4 inch brazing rod prepared in a similar manner to the above one. This bar is made to fit the hand-held. It only stops the unit from moving around and the microphone can hang on it when not in use.

Around the city and suburbs the rubber-

duckie antenna is quite satisfactory to access the local repeater, but if your location is a bit noisy, a quarter-wave Gutter Grip antenna or a small length of coaxial cable should improve signals.

A word of warning ... Do not leave your vehicle in a public car park unlocked or with the window wound down or you will not have a hand-held ... and the local repeater may have an extra unit! Unclick the unit and take it with you. I am delighted with my hand-held and take it everywhere with me.

Whilst we may not be able to home-brew equipment equal to the latest piece of professional amateur technology, there are many little pieces of ancillary gear and accessories that the amateur can build and have the satisfaction of saying that "I made that myself!"



QSP

SINGLE CHIP MODEM

The first single chip modem for 1200 bps full-duplex transmission has been introduced by the Linear Division of Fairchild.

The μ A212A modem performs all signal processing functions required for a Bell 212A/103 compatible modem. It incorporates an on-chip switched capacitor modulator, digital coherent demodulator, switched capacitor filters, 3.6864 MHz crystal oscillator and certain control and self-test functions.

To form a complete system, the unit requires only a general-purpose single-chip microcomputer to handle dialing, handshaking protocols and mode control functions and minimal external circuitry to handle the RS232C interface, ring detection, telephone-line interface and power supplies.

For voice/data terminals, where high reliability and space savings are critical, the μ A212A provides the first single-chip upgrade path from on-chip 103-type 300 bps modems.

It is capable of accommodating both high and low-speed data rates, and incorporates a novel switched capacitor modulator and digital coherent demodulator for 1200 bps QPSK operation, and a separate digital FSK modulator and demodulator for rates of 0-300 bps.

For example, in the high-speed asynchronous mode, transmit data from the DTE enters the chip's transmit buffer which synchronises the data to the internal 1200 bps clock, in the synchronous mode the buffer is disabled.

From Australian Electronics News, March 1984

"When Morsing, Remember the Human Factor"

Written by Jack Hum G5UM and reprinted from The Shortwave Magazine, February 1986

Smarter somewhat from the sensation produced at a previous meeting — quite unwittingly — by that curious American, Cyrus B Clickmeister, about how telegraphy was used Stateside, the club members assembled in critical mood for "The Annual Inquest".

Not at all as cadaverous as it sounded from its title, "The Annual Inquest" was the meeting of the year when the Club looked back on its performance in The Great Annual Transmitting Contest, decided what went wrong (if anything), what went right (if anything) and How to do Better Next Time.

Mister Chairperson set the temper of the meeting when, recalling That Contest, he said that although the weather was good, the food was good, the logging was good, and the equipment good (for most operators, even if some felt there were too many confusing bells and whistles on the front panel), there was one area which was not good: "Our telegraphy performance was lamentable, and I'd like to ask what you all think can be done about it well ahead of next time."

To the American at the Man at the Club spoke up at once to say quite forthrightly: "What can be done about it? Why refrain from entering at all next year? Telegraphy is an outmoded form of communication anyway."

Coming from one known to have served twenty years as a seagoing operator this observation was received with what is sometimes called a stunned gasp, as when an atomic cloud tobacco smoke at the rear of the room emerged the quiet bass voice of Highly Technical Gent:

"With respect, TMC, I think that remark of yours to be defeatist, to say the least . . . and I speak quite dispassionately as a Class-B ancient of two decades sitting who hasn't the slightest interest in your claim."

The stunned silence was broken again, this time by Virginibus:

"I wonder what Cyrus B Clickmeister would have to say about that?" he piped: "Pity he's had to move on to Götterdämmerung or was it Garmisch-Partenkirchen?"

"Garmisch, where?" roared Ethelbald: "That's what they do down at the Chinese take-away."

"H'm, we are getting international!" murmured Old Fangler: "... what with Germany, China and our dear American friend."

Detecting that the discussion was wavering woefully away from the specified bandwidth Mister Chairperson attempted to pull it back on frequency:

"International . . . a buzzword if ever there was one. And 'Morse' another buzzword if I may say so."

Nobody could decide if this reference to Morse was an intentional pun or an unintentional one. At any rate, everybody was too polite to laugh. Then —

"Please speak, Old Fangler!" invited Mister Chairperson: "You've been pounding brass and dithering bug-keys longer than most of us. Do you tell we fell down during The Great Transmitting Contest because we weren't good telegraphists?"

Never one to be cornered, Old Fangler gave it as his opinion that some of the Club members were good telegraphists or some of the time but not all of them for all of the time. He felt he ought politely to dispute TMC's suggestion that telegraphy was an outmoded mode. Warning to his theme as he so often did when roused he went on:

"Remember with CW you are putting all of your transmitted power into a single note in the listener's receiver. You don't do this with even the best generated SSB. Your voice spreads out that note from cycles wide to kilocycles, and from what I've heard a lot of it splatters far beyond the 3½ kilocycles it ought to occupy."

"He means hertzies not cycles" came an anonymous comment from somewhere in the middle of the room. Ignoring it Old Fangler went on:

"If you think about it you won't deny that telegraphy is the most efficient means of sending information that you could want — and I think Cyrus B demonstrated this to us at the last meeting."

Rarely did O-F expatiate at this length. "He's proper wound up" was Ethelbald's stentorian opinion. Then through a Battle of Jutland smoke screen at the rear of the room came the thunder of a heavy cannonade: it was Highly Technical Gent to say:

"You can't substantiate that claim, Old Fangler. With respect to your next point and to your dear old bald pate I would suggest that any form of data-processed transmission gives you a higher efficiency in terms of information impartation than your old up-down brass pounding ever could."

Impatience . . . I must remember that one" murmured Mister Chairperson to Mister Moneybags in the next seat. "You don't think he meant implantation?" came the whispered reply.

Young Virginibus of the sharp ears, overhearing these sotto voce exchanges quickly chipped in:

"All this data processing stuff is a bit off-beat. Let's get back to real Morse. What I've noticed is that lots and lots of people are very, very keen to use an And six thousand of them are those Class-B people who asked for that variation in their licenses to be made to let them get pounding!"

With a snort that could have been congestion of his tobacco pipe but probably wasn't, Highly Technical Gent gave it as his opinion that the noble six thousand had requested the Morse auxiliary facility to speed the day when they could get away from those boring omniscient QSOs on 'Two' and instead talk to the world on aitch-off phone. "If you believe they want to mug up the Morse to talk to each other on 'Two' you'll believe anything, young Virginibus," he declared.

"Spread a little charity, HTG" requested Mister Chairperson: "It's just possible that the six thousand and lots of others like them do genuinely believe CW to be the best mode there is, and that's why they're mugging it up. I'm confident they'll continue to use it even when they've graduated to Class-A and aitch-off."

"Hey, they don't graduate!" snapped HTG: "May I remind you what I've said here before, that a Class-B system is demonstrably more efficient than a Class-A one?"

A groundswell of assent and dissent rose from the assembled members like the sussuration of a charged cloud when the antenna is turned upon it. Mister Chairperson felt it was time to effect a discharge.

"Thanks, all, for your opinions" he began in an S4 voice, hand raised.

No effect on the assembled company.

"Ordah, ordah!" he called at about S6 in his best emulation of that other chairperson in Another Place whom he had heard when Radio 4 went to SW1.

Still no effect. Accordingly, at S9-plus:

"Will you lot darn well get on with it. They did."

"Chair, please, gent's" from Mister Moneybags as the dissent diminished by a dozen decibels, punctuated only by a sudden "Cor", now you can hear an aitch drop! from Ethelbald.

Proceeded Mister Chairperson: "We've made no progress on our Annual Inquest, so where do we go from here?"

"I'll tell you," ventured The Man of the Club: "Don't let's have an inquest at all. Instead, let's have a local CW contest to see just how bad — or good — we are . . . and I know of at least six Class-B men in the room tonight who would be ready to have a go."

"That we will!" The six chorused almost in unison.

"That's very big of you, TMC!" quoth Virginibus: "Only ten minutes ago you said telegraphy was an outmoded and inefficient way of talking over the air — and now listen to you!"

The Man at the Club hung his head in mock humility: "Remember, Virginibus, I did my professional brass pounding for money, and in my years at it I reached the conclusion that there must be better ways of transmitting intelligence. Suggestion: ask someone who did it for love, not for money, how he feels about it. Speak up, Old Fangler!" "Please do", added Mister Chairperson.

Old Fangler rose to his feet, adjusted the old timer's badge in his lapel, and drawing a deep breath said:

"When we started our inquest this evening, fellows, we agreed that on the day of The Great Annual Contest everything was A: okay — the gear, the food you grabbed when you came off operating-watch, the logging. Then why didn't we win? Mister Chairperson has told you. It was because our Morse technique was lamentable. Why? Because we didn't pay enough attention to the human factor. Morse-sending, and even more important Morse-receiving, are controlled by the human brain. Put all those automatic digital senders and receivers to work if you like, but they'll never do something only the human brain can do and hat's to winkle out those weak 'un seven layers below the QRM when you almost refuse to apply your imagination to what they are saying to you. We'll learn how to do this if we have that local CW contest suggested by TMC. Then 'praps we'll stand a chance in next year's Great Annual. That's enough for me." And O-F sat down.

"Were Cyrus B Clickmeister here this night!" murmured Mister Moneybags as they all trooped out to the tea bar.

GaAsFET LOW-NOISE AMPLIFYING MODULE

Mitsubishi Electric have developed a gallium arsenide field effect transistor (GaAsFET) low-noise amplifying module, which features high gain, for use in satellite broadcast receivers.

Satellite information systems require high performance microwave receivers featuring low noise and high gain, and the performance of such receivers depends on GaAsFET amplifiers.

In developing the amplifying module, Mitsubishi Electric has succeeded in integrating discrete devices into a hybrid IC by using a thick-film ceramic substrate. This has made it possible to manufacture low-noise, high gain receivers for business communications and direct satellite broadcasting systems.

Adapted from Australian Electronic News, March 1986

ZERO DEFECTS

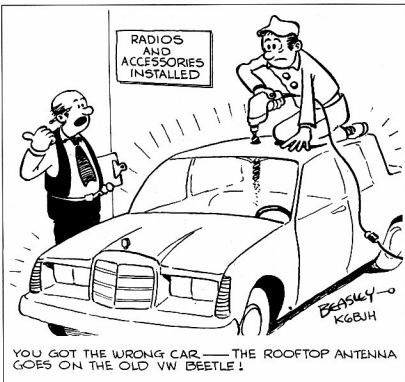
A zero defects warranty, which was implemented in August 1985, has now been extended to cover all integrated circuits produced world-wide by the Philips group of companies.

Under the terms of the warranty a customer who finds a single defect in a batch will be able to return the entire batch for re-screening or replacement.

The warranty applies to all standard-function ICs manufactured after 1st March 1985. Customers will have 30 days in which to report a defective batch.

This warranty means that Philips standard is not 500, 200 or 50 parts per million, but zero.

Adapted from Australian Electronic News, March 1986



INVENTORY OF VIDEO TRANSMITTER VENDOR SEIZED

On 16th January, agents of the FCC, the US Marshal and the FBI served a search and seizure warrant on a company in Las Vegas, Nevada. Several thousand dollars' worth of suspected illegal electronic devices and accompanying shipping receipts were removed from the facility.

The warrants were based on evidence developed by FCC that indicated that the company had continued to illegally market electronic devices after having received several warnings from the FCC.

The specific devices, marketed under the brand name of TV Genie, were designed to transmit video programming from equipment such as video tape recorders and video cameras to television receivers. The transmitters were being marketed by mail order through advertisements placed in several electronics-orientated consumer publications. In addition to the marketing of such equipment being illegal, use of these low power television transmitters constitutes unlicensed operation and subjects the user to severe penalties. Despite claims to the contrary by some manufacturers, none of the low power television transmitters may be legally sold or used in the US, regardless of the transmitted power.

From The ARRL Letter, 13th February 1986

ARMCHAIR PUNTERS GET VIABET

High technology now allows anyone wishing to bet on the TAB in Western Australia to do so from the comfort of their living rooms. The TAB has linked up with Telecom's Viabet computerised information network to provide what is called a "Viabet" service for home use.

Viabet is a computer-based information retrieval system, which can be switched through to a normal domestic television set.

It was already available for use in 12 000 Australian offices and homes, and the TAB in WA hope it will have 600 regular Viabet users within the next few months.

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YES! — Jamboree on the Air Can Be Fun

Noel Lynch VK4BNL

15 Noeline Street, Dorrington, Qld. 4060

After a very long association with Jamboree on the Air (JOTA) — in fact, since its inception in 1958, and at both Scouting and amateur radio levels, I sincerely believe that JOTA can be fun for both amateur operators and the Scout and Guide Leaders. However, like many other facets of our hobby, eg DX, Contests, or in fact any other contact, it has to be worked at to make it a success. Things just don't happen! It is particularly so with JOTA, because in this instance we are involved with others — the Scouts, Guides and their Leaders — who are as unfamiliar with amateur radio activities as we are with their activities. So it is very important to both parties that we really get-together to ensure its success, and provide enjoyment for both sides in this very wonderful national and international experience.

I have personally had a long association with JOTA in both areas, Scouting and amateur radio. In fact, it was thanks to JOTA that I gained my first amateur radio licence in 1972. I participated in the first JOTA in 1958 and in that year and the following two years, was a Scout Group Organiser for JOTA.

It was an honour, in 1961, to be asked by the State Scout Association to accept the appointment as Branch (State) Organiser for JOTA in Queensland, and again in 1984 being appointed as National Organiser for JOTA at National Scout Headquarters level. This latter appointment was held continuously until my retirement in 1984. (My predecessor, Commissioner Peter Hughes VK6HU, has also been involved with JOTA since its inception).

Jamboree on the Air gives Scouts and Guides an opportunity to make friends at an Australian and International level, a chance that would normally be possible unless they attended a national or overseas activity. Such activities are normally only held once every three years, in the case of a National Jamboree, or perhaps at an even greater interval in the case of a World Jamboree. In the present financial climate it would be an opportunity that fewer than two percent of Scouts and Guides would get the chance to experience, particularly at an international level.

By amateurs volunteering their services for JOTA, they are giving Scouts and Guides a rare and unique opportunity and many may be interested to know that many friendships made during JOTA endure over the succeeding years. A Philippine Scout who made contact with the author during JOTA 1970, still maintains regular correspondence to this day.

There are other spin-offs as a result of JOTA. Like many other Scouts, Guides and Leaders, I became an operator through contact with JOTA. When I became involved in JOTA with my group in 1958, the interest engendered in amateur radio through that association prompted seven of my Scouts to seek a further hobby in amateur radio, and due to the good grace of a friendly local radio amateur operator, we were able to form a special study group. The result of this study group was that four of the boys eventually gained their Limited Amateur Radio Operators Certificate. They even shamed me into following in their footsteps, a consequence surely none of us has ever regretted.

I believe it most important that all participants get the most from JOTA. If neither side do, there has to be a reason. The reason can only be that one or the other side, or both, did not work at it, and I stress that both sides must work at it.

At the very beginning of JOTA, both the founder, Les Mitchell G3BHK, and the Scout World JOTA Organiser, Len Jarrett VE3MYF, were well aware of this, so they released the following Guide-lines to ensure that both parties really achieved something worthwhile from their association with JOTA. There is no apology for repeating them now in the hope that they will be of some use to you also. Firstly though, it should be mentioned that this

years JOTA commences at midnight, local time, in each country throughout the world, on Friday 17th October, and terminates at midnight (again local time), on Sunday 19th October.

The Australian National Opening Ceremony takes place through VK1BP, located in the grounds of Government House, Canberra, commencing at 0400 UTC on Saturday, 18th.

Amateur operators who may wish to volunteer their services are not expected to make available their services or the use of their equipment for the full 48 hours of JOTA. All or any portion of this period they can spare will be very much appreciated.

Now to the Guide-lines:

A definite need exists for the amateur operator and the Scout and/or Guide Leaders to get-together prior to JOTA. The initial meeting could determine whether the operator wishes to participate at his own shack, or if agreeable to a suggestion from the Scout/ Guide Leader, at the Scout Den or perhaps camp. If the participation is to be away from the operator's shack, he should make quite clear that assistance is required in getting the equipment to and from the site, and in the erection and taking down of antennas. Also, that as the operator will be fully occupied with operating, it should not be unreasonable to expect that assistance will be forthcoming with the provision of refreshments and meals. Most groups are already doing this anyhow.

It was thanks to JOTA that the writer gained his first amateur licence in 1972.

Stress that during JOTA, a Leader must be in attendance and this is at all times. This should be made very clear as it is not the intention of either the Scout or Guide movements that operators during JOTA should be acting as sitters. If at the operator's own shack the group/s should be kept as small as you stipulate, with rostering for other groups to be arranged by the Leader with rostered groups turning up only at the pre-arranged times. The Leader should ensure this, especially by his own presence at all times.

While initially the approach might be expected by the amateur from the Scout or Guide Leader, any Scout or Guide group not knowing how to make the initial contact would certainly welcome one from an amateur operator. Ensure, though, that any arrangement made with a group is confirmed at least one month prior to JOTA.

It could be advantageous to both sides to inform the Leader that in the interests of JOTA, you would welcome the opportunity to make several visits to the group prior to JOTA so that

you could make the Scouts and Guides aware of some of the mysteries of the hobby, in particular, propagation, how antennas work, basic description of amateur radio and perhaps, the phonetic alphabet, and more importantly, intelligent use of the microphone.

A couple of practice sessions with the Scouts/Guides and their Leaders would represent a definite bonus, using radio telephone procedures. The use of a tape recorder would have enormous value and would almost certainly avoid later on the tongue tied situation, so exasperatingly obvious during JOTA contacts.

After JOTA, the Scout/ Guide group (not the amateur) is expected to submit to their State Scout/ Guide JOTA organiser, a log report, including amongst other items, details of contacts, frequencies, and whether contacts were in the State, inter-State, or overseas. They may, however, seek your assistance there. Their report, when submitted, should also ensure that you, the amateur, will receive a Thank You Participation Certificate. Do not hesitate to let your local group know if you do not receive yours.

The Scout/ Guide Leader present should be able to relieve you of all responsibility except actual operating once you have explained what you want done and you should stress this in your pre-Jamboree discussions. The Leader, during JOTA, could introduce the Scout/ Guide, having ensured beforehand that some homework has been done by the Scout or Guide in developing a suitable topic for air conversation — the group, its size, main interests, information about interesting camps, historical and contemporary details of the local district — farming, industrial, etc — and the Leader should ensure that the Scout/ Guide remains until the next over in case some questions need answering. The Leader is also responsible for ensuring silence in the shack during operations.

Finally, good operators ensure that any spare equipment in the shack not actually in use has microphones disconnected while the main transmitter is in service. And for a final final, please note that during the National Opening Ceremony from Canberra on Saturday 18th October, commencing at 0400 UTC (and for a half-hour warm-up period prior to that time) three frequencies are being used simultaneously for the Governor General's and other dignitaries speeches, and for the call backs afterwards. These frequencies are 7.090, 14.190, and 21.190 MHz and your assistance in avoiding these frequencies until 0500 UTC on that date will be deeply appreciated by all concerned with the Ceremony.

In your particular State, the Scout Branch Organiser and Guide Liaison have a Wireless Institute of Australia Jamboree on the Air Liaison who may be of further assistance to you in matters relating to JOTA. A letter to your local Division, or to the State Branch Organiser JOTA, c/- of the address for Scout Headquarters in your State as per the Telephone Book, should bring an immediate response to any queries you may have. Alternatively, an inquiry to the National Co-ordinator JOTA, Commissioner Peter Hughes VK6HU, 58 Preston Street, Como, WA, 6152 will certainly bring a prompt response to your inquiry.

So, do work at your participation in this year's JOTA and good luck and a very enjoyable participation in the 29th Jamboree on the Air. Hopefully the above Guidelines will help you get started this year, if you have not already participated, or if you are a previous participant, ensure an even more enjoyable participation in 1986.



Lord Baden Powell, founder of the Scouting Movement.

Photograph from The Story of 25 Eventful Years in Pictures

HAVE YOU CAUGHT THE JUBILEE INDUSTRY TRADE TRAIN?

The Jubilee Industry Trade Train has been out there in VK5-land, just waiting for your next call!

Since 16th March 1986, this train has been busy touring country centres around South Australia. On the train are displays and demonstrations from 30 South Australian companies. Amateur radio communications are also aboard. (The previous look-a-like travelling rail show-case of commerce took place 35 years ago).

South Australia's birthday appears to be an opportune time to re-introduce the Trade Train in keeping with the celebrations which are happening in South Australia. By the time the train returns to Adelaide from 5th-9th June, the quarter of a kilometre long train will have travelled in excess of 4000 km of railway networks during the three-month long program. The Industry Trade Train is one of many major Jubilee 150 projects for 1986, organised by the Industry Executive Committee of the Jubilee 150 Board.

South Australian companies and organisations representing most of the State's major employers and prominent small businesses have taken the opportunity of the 150th celebrations to show as many South Australians as possible the showcase of industrial expertise, innovations and achievements.

The train is based on a series of exciting displays and demonstrations housed in special exhibition cars and visitors are able to look and learn, touch and try. However, the action has not all be on the tracks. Platforms and the surrounding areas will form part of the Trade Train display, adding the fun of the fair-ground.

Community groups were invited to arrange displays and promotions covering local and district industry, commerce and history. There is also a craft exhibition, sideshows, and a wide range of souvenirs and refreshments — something for all the family).

Local Jubilee 150 Committees, Service Clubs and other community groups also organised activities to coincide with the train's visit. These

**Graham Horlin-Smith VK5AOZ
CO-ORDINATOR JUBILEE 150 COMMITTEE
(WIA SA DIVISION)
2 Athol Avenue, Trannere, SA. 5073**

include historical re-enactments, period costume balls, poster competitions, foot and bicycle races, trade fairs, carnivals and street parades.

The WIA (SA Division) and South Australian amateurs were quick to realise the promotional possibilities both for the hobby itself as well as provide support input to the Jubilee 150 project by way of amateur communications. The opportunity to give publicity outside South Australia and overseas to the train activity and therefore involvement of amateur radio on the train was automatically given the green-light by the train's executive officer, Mr Andre Wilcox and his Committee.

Once again South Australian amateurs have taken to the rails, but with a slight difference. This time volunteer groups from the city and country areas have combined to work from the stationary station on board the train in each of 20 different country locations including Adelaide at the beginning and the end of the journey. These amateurs, by their involvement, are sharing this Jubilee activity with amateurs in Australia and overseas.

The amateur station is situated in a brake-van in Carriage 8, Space F in the middle of the train. This is ideally situated as a communications centre with a static display of amateur radio materials and information for the visitors to the amateur base station. The display has been professionally accomplished again by Peter Koen, whose contribution to the promotion of the hobby has been greatly appreciated.

At each of the designated whistle stops, a fresh team of amateurs take-over — similar to an amateur radio marathon relay. The onboard shack is supplied with quality power from generator cars, with mains power used as a backup at each stop-over, if necessary. Two metre operation is optional dependent upon proximity and the use of



Photograph by Peter Koen

Static Amateur Radio Station Display revamped aboard the train by Peter Koen.



Photograph by Graham Horlin-Smith VK5AOZ

Visitors to the station at Mount Gambier were Rendlesham School Teacher, John McKinnon, his wife Josie, nursing young Jack, and John's sister Heather, on the right and the Keeper of the Log Books.

repeaters whilst HF operation is equipment provided and worked by amateurs at each location.

The Jubilee call sign, VK5JSA/Trade Train offers further points for the Jubilee 150 Award. For those interested in the Jubilee Award, the Trade Train is a new activity and is worth 15 points for the initial contact for each of the bands the station is worked. An additional five points can be claimed for the Award for each country location that the train is worked. Club and operator call signs activated from the train offer additional points.

A special, one-off, one contact QSL card for the Trade Train Award can be sent to the WIA (SA), Box 1234, Adelaide, SA 5001, (marked Trade Train Award) for \$2 packaging and mailing. This Award had become quite popular to follow on from the Cape Willoughby, Kangaroo Island Jubilee 150 Award.

The train will be in Broken Hill on 29th-31st May and in Adelaide from 5th-9th June. Frequencies operated are 28.470, 21.186, 14.186, 7.086 and 3.586 MHz. The prime net frequency is 3.586 MHz and meets every Tuesday, Friday and Sunday at 1000 UTC.

Several further activities are planned for the Jubilee 150 Year including Rail Mobile from Adelaide to Alice Springs and return in June, the City of Marion Centenary Celebration and a special activity for the Grand Prix in October.



A Carnival Atmosphere surrounded the opening of the Train's Journey.

Photograph by Graham Horlin-Smith VK5AOZ

Novice Notes

Drew Diamond VK3XU
Lot 2, Gatters Road, Wonga Park, Vic. 3115

THE OPEN WIRE FEED, HF MULTI-BAND DIPOLE

Most solid-state transceivers require a load of nominally 50 ohms for correct operation. If the antenna presents an impedance which departs too greatly from this value, circuitry which monitors the SWR (in most transceivers) will cause the drive power to decrease in an attempt to protect the output amplifier. For a coaxial fed antenna, line losses will also increase in proportion to the degree of mismatch. The connection of an antenna coupler or tuning unit between the radio and antenna will probably permit the output amplifier to see a 50 ohm load, but beyond the coupler, towards the antenna, the degree of mismatch and resultant high SWR will be unaltered, so line loss will remain. The amount of loss will depend on the quality of the coaxial cable.

One of the most popular all-band antennas for many years has been the horizontal or inverted-vee wire, fed with low-loss open wire feeders. The reason for the popularity is easy to explain. Just about any length wire — as small as one-quarter wave-length long on the lowest band, will yield reasonable results, and really good performance can be expected on all bands where the radiating portion is longer than one-half wave-length. Any convenient feedline length (although some lengths will provide easier matching) may be used. Even is a very high SWR may exist, losses will be acceptably low, as the main dielectric is air. Because of the physically flat nature of the

feedline, it is generally simpler to get it indoors than for coax. For example, the line may be passed through the gap between a window and frame and still allow the window to be closed, so avoiding the need to drill holes and so on. This applies, especially to the low-loss television-type line (Figure 2). There is one prerequisite with this antenna however, in that a tuner is an essential requirement.

The tuner performs three main functions:

* Provides a match between the nominal 50 ohm impedance requirement of the radio, and the complex, usually unknown impedance at the station end of the feedline.

* Interfaces the unbalanced coaxial input/output of the radio to the balanced feedline and antenna.

* Significantly reduces the level of any harmonics, and provides some pre-selection for the receiver.

Because of the voltages and impedances involved, it is generally not possible to perform the matching function with broadband transformers and baluns. More about the tuner later.

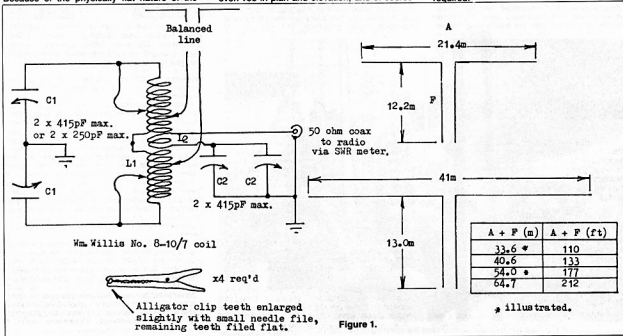
ANTENNA

The top radiating portion of the antenna may be just about any convenient length that may be fitted into the physical boundaries of the property. It may be flat-top or inverted-vee or even vee in plan and elevation, and of course

the wire should be located as high and in the clear as is reasonably possible. The author has used various forms of this antenna, the smallest being only 15 metres of radiating portion and six metres in height, to the present configuration which is 41 metres and 13 metres respectively. Two systems which are shown in Figure 1, and the table shows some more dimensions that should prove satisfactory. See also References 1 and 2. The trade-off between radiating portion A and feedline F is not critical. However, aim for as much wire in A as is readily possible consistent with A + F.

Ordinary electrician's earth wire is ideal for the radiating portion, and the feedline if home-made open wire feeders are planned. Figure 2 shows the most commonly available feedline options. The insulators for the ends and feed connection point should be porcelain or glass dog-bone type with long leakage path. Avoid the ordinary egg type. If an inverted-vee configuration is used, three such insulators should be employed. See Figure 3. Note that the strain must be relieved from the feedline connection by passing these wires through the holes of the insulators, as shown.

As an alternative to the insulators mentioned above, teflon rod, about 1.5 cm diameter can be obtained from electrical insulation wholesalers. Sufficient stock to make three or five insulators of about 7 cm each will be required.



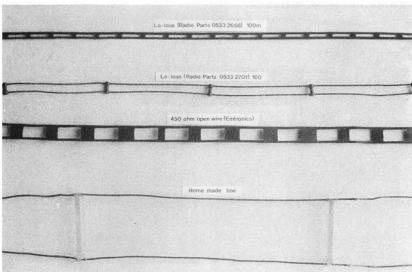


Figure 2.

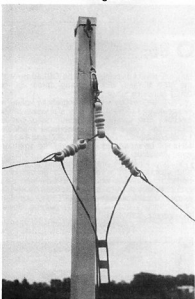


Figure 3.

Poly robe — the kind used by yachtsmen, may be used for the halyards, but it is very expensive, and deteriorates in just a few years of weathering. A cheaper and more lasting alternative is the green plastic covered steel clothes line wire sold in lengths at hardware shops.

TUNER

The circuit of the suggested tuner is shown in Figure 1. Variable capacitors of any kind have become very hard to obtain now, and to my knowledge, all production has stopped in this country. People who have been in radio for some years always seem to have a few going spare. If you know such a person, I can only suggest that they be approached for a donation. The coil is a factory-made one, available from William Willis & Co Pty Ltd, of Canterbury, Victoria.

To reduce the possibility of electric shock, the tuner components should be housed in some sort of enclosure. For simplicity and ease of

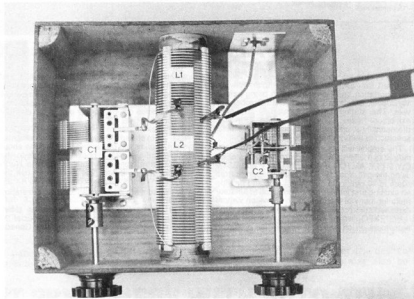


Figure 4.

construction, a wooden box is suggested. See Figures 4 and 5. This method allows us to mount the coil upon discs of wood glued to the front and rear panels without incurring eddy current losses as would be the case with a metal enclosure. Note that a strip of metal runs beneath the two variable capacitors to form a continuous ground connection between these and the coaxial connector fitted to the back panel of the box. The braid from RG-58 coaxial cable may be used for inter-connections.

The link coil, L2, is formed by isolating three turns in the exact centre of the coil L1. The free ends of L2 should be brought out to the side of the coil, and the centre ends of L1 rejoined as shown in the circuit. Do not earth L1.

If only low power operation is contemplated, C1 may be an ordinary dual-gang broadcast capacitor. These are not too difficult to find. For higher power work, C1 must have wide spaced vanes. A dual-gang 200 or 250 pF unit would be fine for this. C2 may be a dual-gang 415 pF BC

shafts of these two capacitors are nominally at RF earth potential, so no special insulating precautions are necessary.

TUNER ADJUSTMENT

By experimenting with the position of the taps for C1, the antenna connections, and adjustment of C1, band noise will be maximised to a point where no further adjustment causes a worthwhile increase in noise or signal levels. It will be found that near maximum C will be required at C2, so this may be set at full mesh for starters. Now, on a clear channel, apply a bit of carrier from the radio and observe the SWR reading. It should be possible to bring the reflected reading down to a small value with adjustment of C1 and C2. If a reading of near zero cannot be obtained, switch off carrier and try moving either the capacitor or antenna taps closer to, or further from the centre of the coil. **Do not touch the coil or feedline whilst carrier is applied!** When the ideal or best positions are found, record them. Remember that the antenna and coupler are symmetrical, so the capacitor and antenna taps must be positioned an equal number of turns from the centre, with the antenna taps always closer to the centre than the capacitor taps. If you are unlucky enough to have a feedline length that will just not allow

type, even for power levels to the legal limit. The you to obtain a satisfactorily low SWR on one or two bands, experimentally add about one metre of feedline and try again, checking to

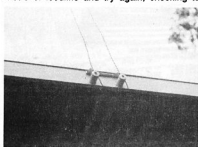
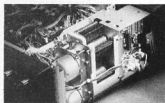


Figure 6.

KENWOOD

TS-440S



AUTO ANTENNA UNIT BUILT IN

The TS-440S is an HF transceiver designed to condense every conceivable feature for SSB, CW, AM, FM and AFSK mode of operation on all amateur bands in compact package. It is the ultimate compact size with the automatic antenna tuner built-in and featuring a highly efficient final amplifier cooling system. It incorporates a 100 kHz to 30 MHz general coverage receiver having superior dynamic range.

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WORMALD COMMUNICATIONS—51 DENNISON STREET, HAMILTON, NEWCASTLE (049) 69 9999
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E&K COMMUNICATIONS—14 OUTTON STREET, DICKSON, A.C.T. (062) 49 6437
OX ENGINEERING—158 GRANITE STREET, PORT MACQUARIE (0665) 84 9922
FRANK BOUNDY—LISMORE (066) 85 2145

INTERSTATE

VIC: EASTERN COMMUNICATIONS—168 ELGAR ROAD, BOX HILL (03) 288 3107

Further, beware of dealers not listed in this advertisement who are selling Trio-Kenwood communications equipment. All Kenwood products offered by them are not supplied by Trio-Kenwood (Just) Pty. Ltd. and have no guarantee applicable.

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SUMNER ELECTRONICS—78 KING STREET, BENDIGO (054) 43 1977
HOBBS ELECTRONICS—477 NELSON ROAD, MT. NELSON (002) 29 6751
WATSONS WIRELESS—72 BRISBANE STREET, HOBART (002) 34 4303
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International News



18th WORLD TELECOMMUNICATION DAY
Partners in progress: governments, operating entities, manufacturers and users was the topic chosen by the Administrative Council of the International Telecommunication Union (ITU) for the 18th World Telecommunication Day, which is celebrated annually on the 17th May. This day commemorates the founding of the Union in 1865, under the name *International Telegraph Union*, by the delegates of 20 States signatories of the International Telegraph Convention, the first inter-governmental treaty for the regulation of international telegraphy.

Towards Universal Telecommunications
Paris, 17 May 1985: The Plenipotentiaries of 20 states, moved by the wish to establish a permanent understanding among themselves, signed the International Telegraph Convention creating the International Telegraph Union, later to become the International Telecommunication Union.

At this time, the industrialisation of certain regions of the world called for increasingly reliable and swift communications. Although the telegraph was already widely used within many states, the creation of a genuinely international telegraph network came up against a man-made barrier, the national frontiers, at which the telegraph wires usually ended.

The International Telegraph Convention of 1865 therefore provided measures aimed at overcoming this obstacle and promoting the development of a world-wide network.

As the first inter-governmental treaty applicable to a public service, the Convention — to which every sovereign state was at liberty to accede — contained the concept of universality which was to become an inspiration for the action of the countries Members of the Union.

The first stage consisted in the standardisation of operating and accounting methods from amongst the different technical possibilities: every major innovation in communications was swiftly matched by specific Union action to make use of the new discovery in this network.

The history of the ITU in this respect reflects that of the technological development of telecommunications.

For example, the invention of the telephone in the 1870s led to the adoption at Berlin in 1865 of the first regulations governing the international telephone service.

The invention of radiotelegraphy at the end of the last century led to the signing of the International Radiotelegraph Convention at Berlin in 1906.

In the 1920s, the introduction of new services such as broadcasting and the growing complexity of the techniques employed prompted the countries Members of the Union to allocate the frequency bands and to set up Consultative Committees on International Standards.

At Madrid in 1932, the Plenipotentiaries of the Union emphasised the universality of telecommunications by deciding to merge the International Telecommunication Convention and to rename the organisation the *International Telecommunication Union*.

Closer to our own times, the intensive use of radio communications necessitated the creation of an international board to manage the frequency spectrum. The dawn of the space age in 1957 impelled the Union to adopt regulations for the space services.

A world-wide integrated network was thus gradually constituted through the will of the ITU Member countries, accompanied by the strengthening of the concept of universal telecommunications at the service of every member of the human community.

This evolution was greatly assisted by the decision of the Plenipotentiaries, meeting at Atlantic City in 1947, to make the Union the United Nations specialised agency for telecommunications.

Having become part of a large pattern, the ITU actively co-operated with the other specialised agencies in implementing the United Nations Development Program.

Design and installation of national and regional networks, training and the preparation of plans — particularly for radio communication services — intended to safeguard the legitimate interests of all countries regardless of their technical capacity at any given time: ITU action now recognised the role of telecommunications as a key to social and economic development.

This role was reflected in the work of the 10th ITU Plenipotentiary Conference, held in Nairobi in 1982, which as the very Preamble to the Convention signed by the Member countries affirms, took its decisions having regard to the growing importance of telecommunication for the preservation of peace and the social and economic development of all countries.

Thus, the Nairobi Conference marked a turning point in the history of the Union which, while continuing regulation, standardisation, co-ordination and planning activity, also committed itself to the task of redressing the enormous imbalances in telecommunications development.

For this purpose, the Plenipotentiaries set up an Independent Commission of 17 wise men representing all continents and with the assignment of producing specific proposals designed to put an end to this unacceptable situation.

Proposals whose importance was stressed by the ITU Secretary-General, to whom they were submitted in 1985.

These proposals, calculated to motivate the international community and national authorities alike, might, if implemented without delay, turn the tide. Within 20 years they might place within reach of every person on Earth, in whatever region, a long-distance communication service, namely, the telephone, for the greater benefit of all communities and all nations.

Thus 1985, the 120th Anniversary of our Union, under the slogan of telecommunications for development, may also go down in history as the real starting point of the era of universal telecommunications.

TELECOM 87

Telecom 87, the fifth in a series of world telecommunication exhibitions, will be held from 20th to 27th October 1987 at Geneva's exhibition and conference centre — Palexpo.

Under the theme *Communications Age: Networks and Services for a World of Nations*, Telecom 87 will bring together over 600 exhibitors from all parts of the world and will display, on some 65 000 square metres of indoor and outdoor space, the state-of-the-art in equipment and technology. Telecom 87 will also give a glimpse of the future in the rapidly evolving field of telecommunications through demonstrations of prototype equipment yet to come to the market. Telecom is for many manufacturers an occasion to unveil new products and to indicate what is on their R and D drawing board.

World telecommunications exhibitions are organised by the International Telecommunication Union in accordance with a formal opinion adopted by the ITU Plenipotentiaries, in view of their valuable role in keeping the members of the Union informed of the latest advances in telecommunication techniques and in publicising the possibilities of applying telecommunication science and technology for the benefit of the developing countries. ITU world telecommunication exhibitions are recognised as the world's largest and most universal telecommunication exhibitions.

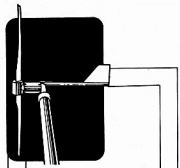
Public and private sector operators, as well as manufacturers and suppliers of telecommunication equipment of 34 countries are already participating in Telecom 87. These are: Australia; Austria; Belgium; Brazil; Bulgaria;

Canada; China; Czechoslovakia; Denmark; Finland; France; Federal Republic of Germany; German Democratic Republic; India; Indonesia; Islamic Republic of Iran; Israel; Italy; Japan; Republic of Korea; Kuwait; Libya; Malaysia; The Netherlands; New Zealand; Portugal; Saudi Arabia; Singapore; Sweden; Switzerland; United Kingdom; United States; USSR and Yugoslavia.

Amidst the many facets of Telecom 87, a number of other important related events will take place, such as Forum 87; Book and Audio Visual Fair; 1987 Golden Antenna Film Festival and Youth in the Electronic Age 87.

Unfortunately, the following portion of Andrews Communications Systems advertisement was omitted from page 7, May AR. Apologies are extended for the inconvenience caused.

- Full cross-band cross-mode duplex when Sat (\$180), 2m + 70cm/6m fitted
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- * CORONA/JUMBO HP-240DX 200W o/p 3.5-30MHz linear \$279
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Equipment Review

Ron Fisher VK30M
3 Fairview Avenue, Glen Waverley, Vic. 3150

KDK FM-240 TWO-METRE FM TRANSCEIVER



It is exactly 10-years since I reviewed a KDK FM transceiver. This was the FM-144-10SXR and was one of the first full-coverage synthesised transceivers to appear on the local market. Several updated models have appeared since, but unfortunately none have been offered for review. However, it is interesting to look at the developments that have occurred over that 10-year period. The most obvious is the size and weight. The new FM-240 is just a fraction over half the size of the original and just under half the weight.

In addition to this, it has the capability of delivering twice the power output of its predecessor.

KDK equipment has not enjoyed a good reputation for reliability over the years. The early models suffered from poor soldering and many of the original models that are still on the air have alignment problems, particularly in the frequency determining section. Let us hope that the current model has a better record in the years to come.

FEATURES OF THE FM-240

The FM-240 is a compact two metre FM transceiver, and is, in fact, the smallest 25 watt FM transceiver on the market at the moment, just beating the Icom IC-27 by a small margin in both size and weight. However, it possibly achieves this by omitting an internal loudspeaker which the IC-27 has, albeit of rather poor quality. The FM-240 is supplied with a microphone/speaker unit.

A multi-purpose LCD readout keeps the operator supplied with all the information ever required. Apart from the operating frequency, it indicates VFO or memory operation, repeater offset, reverse repeater operation, receiver S-meter and transmitter output indicator plus scan and call channel operation. Other functions are also displayed during the memory set-up procedure, as we will see later.

All memory information is retained when the DC supply is removed by a lithium battery. It appears that the programming of the CPU is not dependent on the lithium battery as it is with some other brands. An optional speech synthesiser is available to announce the operating frequency but was not supplied with the review transceiver. A tone squelch facility is included to provide a selective calling function. Repeater offset can be varied from the standard 600 kHz if required. Frequency and memory selection is from either the tuning knob on the front panel or via the up/down buttons on the microphone.

Transmitter power output is rated at 25 watts with high power selected or five watts low power.

ON-AIR

The FM-240 was used as both a fixed station and as a mobile and was found to be easy to set up and use once I understood the setting-up of the memory facility. The instruction states that the rig has User Friendly Man Machine Interface. I did not find this to be entirely true and the instruction book was not as clear as it could have been. I feel that most operators would use the transceiver principally in the memory mode — in other words, fill up the 16 memory channels with all normally used frequencies and only resort to the VFO for the odd unusual frequency.

To enter a memory, it is necessary to go through several steps for each. These in turn, frequency, tone selection for the CTCSS mode, scan mode required for that channel and finally the selection for simplex, duplex or cross (transmit facility on the frequency in the next memory). Once each of the above has been selected it is necessary to hit (their word), the enter button. The readout then displays the next command and the various alternatives are selected by turning the tuning control. When selecting frequency, two tuning

speeds are available, either 5 kHz or 50 kHz and these are selectable with the speed button above the tuning control.

Although stated as such, the FM-240 has two VFOs. The QSY button enables the operator to select any other frequency away from the one in use, be it either a VFO or memory selected. The QSY switch then enables selection of either the original or the new frequency.

While all of this hitting and entering is going on, the transceiver beeps when you have done the right thing. The beep also alerts for activity on the priority channel. I thought that the beep was a bit anaemic in character and certainly not up to the Kenwood system which is amplified through the receive audio channel.

In common with many contemporary transceivers, the FM-240 has a LCD display. While it displays an incredible number of functions, I found it to be rather dull and lacking contrast. The rear illumination is an off-white colour and the digits a rather light black. Perhaps a change of the illumination colour may help.

Overall the front panel presents a very pleasant perspective to the user. One interesting feature is the recessed microphone connector but unfortunately the standard microphone plug is rather hard to tighten up. By the time it is tight, the knurled ring is flush with the front panel, so it is advisable not to cut your fingernails prior to plugging in the microphone. A connector with a longer locking ring would overcome the problem.

In use the microphone/speaker was quite handy. Memory channels could be selected by means of the up/down buttons on the top, or a lock switch at the rear could remove this facility. As is usual with microphone/speaker units, the received audio quality left quite a bit to be desired and then there is the problem of what to do with it when it takes two hands to drive the car! Even a small external speaker producing very superior results.

For mobile use, a handy mounting bracket is supplied as a standard feature, along with a selection of mounting hardware.

UNDER TEST

Frequency Stability and Accuracy: Under hot or cold conditions, the FM-240 was within 100 Hz of the displayed frequency. The 600 kHz offset for repeater operation was also better than 100 Hz

Power Output: The power output was measured with exactly 13.8 volts DC applied to the transceiver. On initial switch-on and the transceiver at ambient temperature 18 watts was delivered, however, as the rig warmed up on receive only, this dropped to only 15 watts. With intermittent transmit periods, this dropped again to 13.5 watts. The results were very disappointing. Two different transceivers were tried with similar results. Low power output was checked at 2.5 volts. Again this was well below the specified power. It is suspected that the low power setting may be internally adjustable, but no information is supplied on this.

On the bright side, it was found that the supply voltage could be dropped to 11 volts with very little drop in transmitter power output. Current drain at 18 watts output was 4.9 amps and at 2.5 watts output 2.6 amps. With the transceiver hot and at the lower output power this had dropped to 4.5 and 2.3 amps respectively.

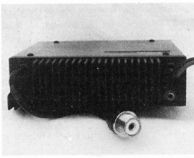
Transmit audio quality was rated as fair. Reports indicated that the speech was rather thin and edgy. Deviation setting appeared to be satisfactory.

Receiver Tests: Receiver current drain was checked with 13.8 volts applied. With the receiver squelched 480 mA. With 250 milliwatts, audio output was 520 mA. The receiver extension speaker output was terminated with an 8 ohm load. Maximum power output was 1.75 watts with one watt at the onset of audible distortion (about five percent). At .5 watts output, distortion was measured at 1.5 percent.

With a four ohm load, the maximum power output increased to 2.5 watts. Receiver noise was measured with a 100 micro-volts input signal with no deviation. This was -28 dBm unweighted and -32 dBm weighted.

Receiver sensitivity was next checked. At one micro-volts input with 1 kHz modulation and 3 kHz deviation, SINAD was 28 dB and S/N ratio 31 dB. A 12 dB SINAD figure was obtained at .6 micro-volts. The mute opened at .15 micro-volts. The S-meter on the FM-240 consists of seven segments on the LCD display calibrated at S 1: 3; 5; 7; 9; +10 and +20. The following results were recorded:

S1 = 2 micro-volts; S3 = 6.3 micro-volts 4 dB; S5 = 10 micro-volts 4 dB; S7 = 16.6 micro-volts 2 dB; S9 = 20 micro-volts 2 dB; +10 = 25 micro-volts 6 dB; +20 = 50 micro-volts.



This gives a total range of only 18 dB from S3 to +20. S units on two metres are apparently only 1 or 2 dB. It was also noted that the S1 segment would indicate when the squelch opened even when no signal was present.

As mentioned earlier, the FM-240 has no internal speaker. Instead, a microphone/speaker is supplied. The received audio quality is therefore rather thin due to the size of the speaker. It also limits the actual audio power output because of its inefficiency. In most applications, a reasonable quality external speaker does a far better job. It is a pity that KDK did not supply an external speaker as standard equipment as Kenwood do with some of their current model FM transceivers.

Perhaps the most disturbing aspect of the receiver performance is the spurious and cross-modulation responses. These appear to be a combination of both internally generated and those produced by external strong signals. To leave the transceiver scanning either the memories or a band scan produces a variety of peculiar noises which in many cases wipe out wanted signals. It also brought up the alarm for the priority channel when there was no signal present.

Just to prove the point on this, the transceiver was taken to a quiet country area, but much the same thing happened and, in fact, made it unusable for our requirements.

Instruction Manual: The instruction book has a total of six pages, of which the first is the introduction and index. It is purely an operations book. The text covers all aspects of using the transceiver, but there are no drawings or illustrations with the exception of a front panel photograph on the front cover. A series of display representations, say with the memory entry sequence, would be of enormous help. Apart from a circuit diagram, there is no technical information at all.

CONCLUSIONS

With so much in its favour, it is a pity that the FM-240 falls short in several important aspects. However, at the current price it represents good value. The review transceivers were supplied by Emtronics Melbourne.

The following test equipment was used to produce the test figures stated in this article. A Yaesu YP-150 and Marconi TF-9571 Terminating RF Watt Meters; AWA F242A Noise and Distortion Meter; Davern Terminating Audio Output Meter; Ramsay CT70 Frequency Counter.

EVALUATION AND ON-AIR TEST OF KDK-240 TWO-METRE FM TRANSCEIVER — Serial Number 000411

Appearance

Packaging * Strong carton with foam inner section.

Size * * * At this time, the smallest FM transceiver on the market.

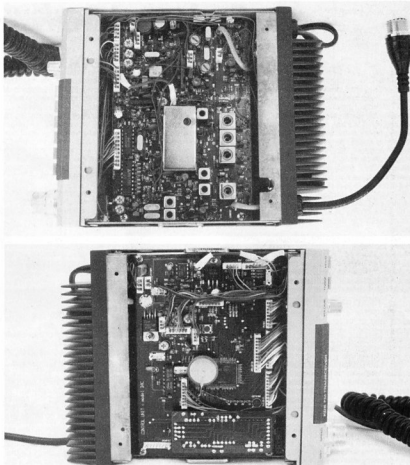
Weight * * * At only one kilogram, the lightest full feature FM rig.

External Finish * * * Very clean attractive finish.

Construction * * * Good quality circuit boards and neat wiring.

Front Panel

Location of controls * * * Apart from some push-button controls, which are rather small and close



together, most frequently used controls are quite accessible.

Labelling * * Like some of the controls, the labelling is small.

LCD Readout * * Although the readout presents more information than others, its readability is only fair. More contrast needed.

Receiver Operation

Memories * * * One of the best 16 memories with frequency, off-set, scanning mode and other information.

S-Meter * * With a total range of 18 dB, only just satisfactory.

Spurious Responses * * KDK need to look carefully at this. Not vaguely comparable with current Icom and Kenwood equipment.

Sensitivity * * Could be better, but over all spoiled by spurious responses.

Received Audio * * Quality and total audio output from speaker/microphone poor. Noticeably better with external speaker.

Transmit Operation

Power Output * * Not up to specifications, and even then drops off as the unit heats up. Should be much better.

Transmit Audio * * Rather peaky quality. Fairly good intelligibility though.

Cooling

* * Heat sink runs rather hot. Location of transceiver should be carefully considered.

Manual

Owners Book * * Covers most operational functions in a fair way, but no technical information apart from a circuit.

Overall Rating

* * Just satisfactory. In other words, try one before you buy. Depending on what you have used previously, you may be either happy or very unhappy!

FIBRE OPTICS

Satellites now used for inter-continental and international communications are being challenged by fibre optic technology.

The United States Cable and Wireless Company is now laying the first of two privately owned Trans-Atlantic fibre optic cables between New York and London.

The Overseas Telecommunications Commission is involved in submarine fibre optic cable, planned to run between the US mainland and Japan via Hawaii, being funded by a consortium of countries.

Australia and New Zealand will be linked by fibre optics in the next five years.

In Australia, fibre optics are playing a major role in the development of the country's telecommunications infrastructure. This technology is being used for high capacity inter-exchange links and to meet the needs of digital communications.

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SP-420 SWR/P 140 - 525 MHz
SP-350 SWR/P 1.8 - 500 MHz
SP-250 SWR/P 1.6-60 MHz
SP-45M SWR/P 140-470 MHz
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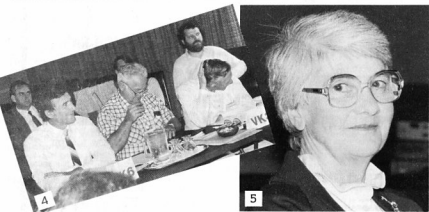


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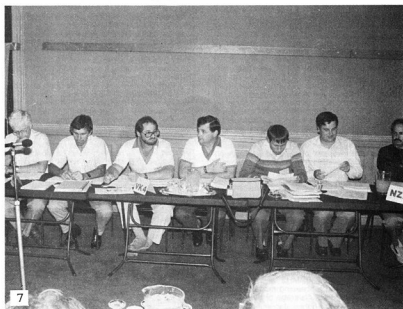
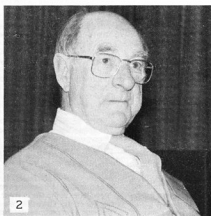
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ANNUAL CONVENTION



The 50th Annual WIA Convention was held in Melbourne over the ANZAC Weekend. Federal Executive Members, representatives from all Divisions and two guests from NZART were in attendance.

The Convention Theme was *Take Amateur Radio and with it the WIA into the 21st Century*.

These photographs show some of the faces that were seen at the Convention.

1. From left: Tim VK2ZTM; Jeff VK2BY; Wally VK2DEW; Graham VK5AGR; Rowland VK5OU and Don VK5ADD.
2. Max VK3ZS.
3. Kevin VK1OK; Alan VK1WX and Ron VK1KRM.
4. Rear: Greg VK3BGW, Bruce VK6OO (partially hidden), Peter VK3AVE. Front: Neil VK6NE; Des VK3DES and Alan VK3BBM.
5. Brenda VK3KT.
6. Convention Attendees.
7. From left: Peter VK7PF; Joe VK7JG; David VK4YAN; Guy VK4ZXZ; Ross VK4IY; David VK4NLV and Terry ZL3QL (who represented the NZART together with Jock ZL2GX.
8. Executive members Bill VK3ABP; Ron VK1RH; David VK3ADW and Allan VK3AE.
9. Barry VK3XV; Tim VK2ZTM; Jeff VK2BY and Wally VK2DEW.



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All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JA3GY	Mie
50.020	JA6VJR	Japan
50.060	HK6EQI	Honolulu
50.075	V56SX	Hong Kong
50.109	JO1YAA	Japan
52.013	P29BP	Lolota Island
52.020	FK8AB	Noumea
52.100	ZK2SIX	Niue
52.200	HK8VF	Darwin
52.225	ZL2VHM	Marswatu
52.310	ZL3MHF	Hornby
52.320	VK6RTT	Wickham
52.325	VK2RHV	Newcastle
52.330	VK7RSY	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RQB	Gunnedah
52.440	VK4RTL	Townsville
52.450	VK5VF	Muswellbrook
52.460	VK6RPH	Perth
52.470	VK7RNT	Launceston
52.485	VK8RAS	Alice Springs
52.495	VK6RBB	Wassie
144.400	VK4RTT	Mount Mowblum
144.410	VK6RCC	Canberra
144.420	VK2RSY	Sydney
144.435	VK6RVT	Albury
144.480	VK8VF	Darwin
144.485	VK8RAS	Alice Springs
144.550	VK5RSE	Mount Gambier
144.560	VK6RBB	Wassie
144.600	VK6RTT	Wickham
144.800	VK5VF	Mount Lofty
144.950	VK2RCW	Sydney
145.000	VK6RPH	Perth
432.057	VK6RBS	Busselton
432.160	VK6RPR	Nedlands
432.410	VK6RTT	Wickham
432.420	VK2RSY	Sydney
432.440	VK4RBB	Brisbane
1296.171	VK6RBS	Busselton
1296.420	VK2RSY	Sydney
1296.480	VK6RPR	Nedlands
10300.000	VK6RVF	Rocky Point

No significant changes to the beacons this month. I have left out some of the ZL six metre beacons and left a couple around the centre of our band which should be sufficient to act as a warning if conditions are suitable. Additionally, the quite high level of ZL activity during the past two years assures contacts without a great deal of trouble. One of the best pointers to New Zealand contacts are still their Channel 1 television stations around 50.750 MHz and with many transceivers having a scanning mode fitted, it is quite easy to program coverage of the television station.

In the March issue of *The West Australian VHF Group Bulletin* there is a list of all the beacons operating in that State, a total of 17. In fact, if you include the two on 28 MHz, which are the only ones not listed in our beacon list. I note also that VK6RTT is shown as being at Port Samson, although I list it as being at Wickham. However, those two places and Karratha are all so close together I seem to remember when I was there in 1982, that it probably does not matter!

MACQUARIE ISLAND

Gil VK3ALU, sends a letter which reads in part, "After a great flurry and instant preparation, the six metre gear returned to Macquarie Island with Sojo VK6SJK. Not only six metres, but two metres as well. Sojo has taken his own two metre station along with him. A new keyer output, together with a two metre beam and an amplifier were got together over a weekend and shipped to Sojo. Frequencies are 52.150 and 144.150 MHz.

"Sojo has been down south before, also to Heard Island with Jim Smith, so is a seasoned expeditioner.

"The additional gear and the original gear are courtesy of the following: VK3s NM, BDL, XO, GJ;

IO; YTB; AUQ and AUL. The rally around to get the six and two metre gear together was really something. I got the phone call late on a Thursday night and the gear was shipped on Tuesday! QSLs will be via VK7RM, QTHR.

It is to be hoped after all the effort that Sojo does make some contacts and in so doing, give some amateurs an opportunity of working VK6O. It would be great if it could be done on two metres, hardly anything seems totally impossible these days.

Gil goes on to say that "lately I have been mainly on 144 and 432 MHz working aircraft enhancement. Have made it to VK1 on 432 and 144, and into VK2 on 144. Others involved include VK1BG, VK1GL, VK1VP and VK2DVS.

"Was very pleased to work VK6AOM (Esperance) on 261 on 432 using only 10 watts. The 50 watt amplifier was away on loan. Also worked VK7ZIF on 14/3 on 432 and 144. Ian lives in Hobart."

Gil also passes on an experience he had with a Dick Smith GaAsFET preamplifier. As received it was off frequency and had a poor noise figure. Eric VK3ZSB, tuned it up to 0.6 dB NF, which indicates a good performance. It had originally been tuned on a spurious response. Quite a trap! Gil hopes to be using it soon. Although not stated, I presume it was a two metre preamplifier.

A further letter from Gil on 6/4 gives an update on the Macquarie Island business. Apparently the Icebird dropped the people off on the island and then headed off to other Antarctic bases and then (hopefully) went back to Macquarie to unload cargo, which included the radio equipment. About the end of April was the expected recall time.

Sojo VK6SJK, has been in contact with Iwen VK3OYL. He has regular scheduled Mondays and Fridays on 7095 MHz with VK7HK. After contact they QSY. On 20 metres they try 14.120 MHz. Time, about 0900 UTC.

OVERSEAS

Steve VK5AIM, has recently returned from a trip to New Zealand where, amongst other things, he enjoyed rides on jet boats, helicopter, light aircraft and a ski-lift! The other things were his 75 contacts on his two metre hand-held, and was able to access most repeaters in the cities he passed through.

Steve also keeps me informed of happenings in the UK via *The Short Wave Magazine* and last month I was able to pass on some information about the relaxing of restrictions in the UK for use of the 50 MHz band (in fact, they seem to be even more liberal there than here in VK), but the Class B stations are understandably annoyed at not being able to use 50 MHz as some of those stations have been on the air for a long time. However, the DTI has invited the RSGB to re-open the topic of initial restrictions after a year, when the cumulative experience of operators will have revealed if there are any interference problems.

The low power (100 W ERP) Belgian station in Antwerp with a vertical antenna is the nearest station to the UK and they are satisfied that, under normal propagation conditions, they are unlikely to suffer interference. With that in mind of course, we wish our UK brothers well and hope they enjoy six metres to the full.

Also from the same magazine I note that the annual two metre table has been included and G6XVV heads the list with 101 countries and 30 countries worked, although the second placegetter GW4TTU has 95 countries and 34 countries. Apparently countries count before countries over there! But 34 countries, even for a UK station is a very good tally. It would be interesting to know what the actual possible total of two metre countries would be.

The 70 cm annual table shows G6DER as

having worked 70 countries and 22 countries, while on 23 cm he has worked 47 countries and 11 countries. What a difference our own geographical isolation makes when we attempt to work other areas on frequencies 70 cm and above, when compared with the opportunities obviously offered in Europe.

The Soviet satellites RS-9 and RS-10 are now complete and ready for launch any time. RS-10 incorporates a 15 metre up and two metre down transponder, which is unusual. Its 40 kHz bandwidth is indicated by beacons on 145.957 and 145.997 MHz.

THE NORTH WEST

Last month, I received my first copy of the newsletter of the North West Radio Society, which is edited by Dave VK6YA, at Wickham. In response to my request for further copies, the April issue duly arrived. Included in its pages is a list of newsletter recipients totalling 33, all located above the 26th parallel, plus one SWL and one rank outsider, VK5LPI! I had no idea there were so many stations up there. Because of isolation, a lot of activity is on HF which is understandable, but the degree of VHF activity is considerable, especially with the availability of two metre repeaters.

Contacts have been made regularly between Karratha to Broome and Shay Gap by Jack VK6RJ and Grant VK6KE respectively, who have also received considerable assistance with ducting up and down the coast, accessing all repeaters down as far as Exmouth, this latter repeater was last heard in Perth on 27/3.

Ron VK9XJ is returning from Christmas Island but, before doing so, was making considerable effort to try and work to the mainland on six metres. At the VK end were VK6s KOJ; WV; AQ and YA. During all these attempts and while their beams were on Christmas Island, VK6YA worked three stations in Alice Springs with signals to S9 at 800 on 31.3. In 14 Ron VK9XJ worked YC0AMC, in Indonesia at 1100 and S9.

Not content only with that contact, Ron VK9XJ kept firing signals to WA and finally, on 6/4 contact was established with Dave VK6YA at 0952. They used 10 metres as an indicator for band conditions, and persistent calls on six metres finally produced the desired result, with reports 5x1 exchanged both ways.

Andy VK6AQ, is looking to construct an SSB repeater, presumably on six metres, for use in the Port Hedland area.

EME NEWS

To say the least, news from the EME scene is very scarce. I note from *The Propagator* that Lyle VK2ALU has been touring New Zealand and one evening, whilst there "they had the largest get-together of EME operators in the Southern Hemisphere" with ZL2AGE, VK2ALU, ZL2AZQ (ex G4KNZ) and DK5AI, who operates two metres EME in Germany. He dropped in unannounced so I can't have been kind to such a gathering.

Lyle and his gang are still being plagued with security problems at their EME site; a further breaking and entering occurred recently but nothing was taken as they have been making a habit of recent times of taking the valuable equipment home again after a period of operating, bringing it back next time and setting it up. Needless to say, a most unsatisfactory way of working.

Although not known to a lot of people, I have, for some years been plodding along trying to complete a parabolic (dish) antenna for EME operations on 432 and 1296 MHz. Much of the constructional work has already been done on the parabola, with all 24 trusses being completed, when assembled, would make a 32 foot (10m) dish.

About two years ago, I began to notice changes

in my walking gait and 14 months ago it became so serious that I was forced into a series of back operations which have been successful, but have left me with balance and walking problems; these would have been much worse except for extensive physiotherapy.

I am now forced into a situation of accepting that recovery can never be complete, and that the inability to lift heavy items and problems with balance particularly when on ladders or greater heights above ground (eg scaffolding, antenna masts, etc) must mean, more or less, permanent changes of life-style. I can do most things I used to, but the two problems mentioned earlier in this paragraph are very serious when it comes to completing a dish and climbing around its tower.

So, with much reluctance, I feel I must terminate the project and maybe do something else. It is a bitter pill to swallow, but then at other times I am thankful I am not in a wheel-chair, which was the alternative!

Accordingly, there must be someone out there who could afford to pay the much reduced price I am asking and be prepared to go on with the project and bring it to fruition, it would seem a pity for all the work so far done to have been wasted while the results of my labours languish in a shed.

This is not a sales column, so I don't propose saying anything more other than to hope the project will continue in someone else's backyard, so that eventually I may be able to see what I started looked like when finished. Details in Hamads.

OTHER NEWS

The Mount Gambier Convention will be held this month so, once again, the friendly rivalry which exists between VK5 and VK3 will cause some hilarity. It is a good show and well worth keeping going as it presents one of the few opportunities for amateurs to get-together in the southern regions, particularly when often it has been possible for participants from both States to have worked one another on two metres or 70 cm.

You are reminded that Six Metres Standings updates are required on my desk by the 15th June for inclusion in the August issue.

The Ross Hull Memorial Contest will only be six months away by the time you read this. Despite all the on-air grumblings about the latest Contest and my request for your ideas for the better running of the Contest, almost nothing in the way of ideas has appeared on my desk. What about something on changes to the scoring table which seemed to AI KH6IAA, Kazu JA1RJU and Clay WA4TNV/KL at the SMIRK Convention USA in 1983. All are well-known six metre operators.

Photograph courtesy Graham Baker VK8GB

be the main bone of contention? I have a few ideas but would like to hear from some others too.

The photograph in this issue shows three well-known six metre operators, taken at the SMIRK Convention in 1983 by Graham VK8GB. AI KH6IAA has provided many a VK with his first KH6 contact, while Kazu JA1RJU has been a most successful operator with a great score of countries, whilst Clay WA4TNV/KL has been about the only contact available from Alaska on six metres that I know of.

From Bill Tynan's *World Above 50 MHz in QST* for April comes the word that E19D and some other Irish stations are receiving six metre permits, with much the same local restrictions as the UK amateurs mentioned by me last month. They have one further handicap in that they are only permitted operation outside of peak broadcasting hours. Operations with permits is also a variation from the Class A same columns.

Also from the same columns, OZ1P1J, who is an active VHF operator in Denmark, is going to Greenland for two years and plans to work six and two metres from there. He plans to set up beacons on 50.045 and 144.902 MHz with the call sign OX3VHF. Might be fairly hard for us at the present state of the cycle, but stations in Canada and USA stand a chance of making contacts.

Bill also comments that during the big auroral opening of 8th February 1986, record-breaking DX on two metres was established. South America and Hawaii worked and a New England (USA) station was heard in Sweden on six metres! But we won't know all this good news until next month, but it certainly sounds interesting. And coming at a time so close on the heels of our own record-breaking two metre season last year. Very interesting indeed. But let us all be ready in VK for December 1986!

Tim Mills VK2ZTM, Beacon Co-ordinator, sent me a list of Australian beacons for comment, compiled from various sources including AMFAR. If the list is anywhere near accurate, and I suggest it isn't, then there are a lot of beacons operating, particularly on 70 cm, about which I know nothing! Call signs listed about which I am not aware of their status/operating schedule are VK1RBC, VK3RMB, VK3RTG, VK3RMV, VK4RTL, VK3RAL, VK6RTW, VK3RGG, VK4ARA, VK6RFB all on 70 cm; on two metres VK3RTG, VK3RMV, VK3RGG, VK3RCW; six metres VK3RGG, VK3RMV, VK1RCW; 50 cm VK6RFB; 23 cm VK1RBC, VK6RFB. As I give all operational beacons continuous publicity through my columns, I think State Beacon co-ordinators should keep me informed of additions and changes promptly. If the present Amateur Radio listings are in error I ask to please be informed now so corrections can be made. If any of the call signs listed above are, in fact, in operation likewise, please inform me —

there is nothing worse than an inaccurate beacon list. Please put pen to paper straight away.

By the time you read this I will have returned from several weeks touring with a caravan through Victoria and New South Wales. Whether I will have been able to make much contact with the amateur population will depend on a number of factors. I am taking enough *keep back* information for me to prepare these columns whilst away so next month may lack any real up-to-date information.

Closing with the thought for the month: *Those who burn the candle at both ends aren't always bright!* 73 The Voice in the Hills.

NEWS FROM LONDON

RSGB MORSE TESTS

Now responsible for administering the amateur radio Morse test, the RSGB has announced details of how it proposes to run the new service.

Overall control will be a Morse Test Steering Committee, chaired by a Chief Examiner, appointed by the RSGB in consultation with the licensing authority, the DTI.

Six Regional Examiners will be responsible to the Chief Examiner for test standards, and Senior Examiners and Session Examiners will look after the practical details at each test centre, and conduct the actual tests.

About 200-250 examiners will be required to begin with, who need not be members of the RSGB. Test must, however, have a recognised Morse qualification at 20 WPM or over, or pass a test, conducted by an authority agreed by the DTI, at this speed.

The form of the test will remain unchanged from that used over recent years, sending and receiving 36 words (average five letters per word) in plain language in three minutes, and 10 five-figure groups in one-and-a-half minutes. There must be no more than four errors in the letters, and two in the figures in either sending or receiving.

Previous tests were available at 22 centres, half of which were coastal radio stations, often requiring a long journey for candidates. The new arrangement, apart from reducing the fee from 15 pounds to seven pounds, will make tests available at more convenient times and locations.

The RSGB hopes to have at least half of the planned 74 test centres available within six months, and the majority in 12 months. Centres will hold six tests a year, and a strict timetable will ensure that candidates not wishing to wait two months for a test will find centres in neighbouring areas available in alternate months for earlier appointments.

Although the scheme was due to start on 1st April, the RSGB did not publish its explanatory booklet until 11th April, so no examiners were actually in post at the off. Special arrangements allowed tests to be administered at the National Amateur Radio Convention at Birmingham on 5-6th April, and these will continue at other exhibitions and rallies as an interim service, while the full scheme gets under way.

Contributed by AR's London Correspondent, Tony Smith G4FAI.



QSP

VOICE MAIL BOXES

Digital technology has made it possible to store, retrieve and forward the human voice in a form called voice messaging.

Using a touch-tone telephone people can communicate via voice mail-boxes, send voice mail to multiple recipients, copy a message and send it to another person for action.

Businesses throughout the USA are using voice messaging and it has been introduced to Australia through AAP Reuters Communications.

On an average more than two-thirds of telephone calls fail to reach the desired party at the first attempt but voice messaging keeps the information flowing without the need for simultaneous conversations.



How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3138

With the demise of Halley's Comet to future generations, one can settle down to some serious DXing even though we are at or near the bottom of the Solar Cycle.

There is still a lot of good DX around, admittedly sometimes one has to be lucky, but a call on a dead band can, at times, produce astounding results.

Recently, I was listening on a somewhat 'dead' 20 metre band and I heard a VK call CQ over a period of several minutes. That amateur was kept busy with some very interesting QSOs for a couple of hours.

Ladies and gentlemen, give the occasional CQ and I am sure you will be quite surprised with the results. If everyone listens and no one calls, the bands appear to be dead. This is proved when a contest is on. Sometimes it is difficult to find a clear space to call CQ without interfering with another station.

AT IT AGAIN

Frank DL7FT, has called it at again. Same country, same name and it appears that the Greek Society, combined with the authorities, are far from impressed.

The authorities still maintain that he has no approval to operate from Mount Athos, however it appears that Frank has notified the ARRL that he has permission from the monks, or at least some of the monks...

The big question is, has he got written permission and if so from how many of the hierarchy in this area and, most of all, is it enough to convince the ARRL DX Desk of being an authentic operation.

Early reports from overseas were that Frank was due to visit Visalia to explain his actions. General advice is that he should watch out for a lynching party. However, later overseas reports said he was not going.

It would be advisable to hold cards on a wall and see basis.

LAOS

XW3LX has been working giving his QSL Manager as N6OT. Unfortunately N6OT is not aware of the honour bestowed upon him and it appears it may be another hoax.

APRIL FOOL'S DAY

ZA1AZ was heard operating from parts unknown on 1st April. Unfortunately he was giving W3HNK as his QSL source. As I have said before, the hobby could do without these types.

FALKLAND ISLANDS

Barry VP8WTTW, is active from the Falkland's until the end of this year. Barry is employed by Wimpey Taylor-Woodrow, one of two construction companies employed in updating the airport. Hence the unusual suffix.

Barry's station consists of an FT-757GX with 100 watts into a three element triband beam at six metres. He hopes to be active now on both 40 and 80 metres, CW and SSB.

QSLs either direct to PO Box 2, MPA, Falkland Islands or via the bureau to G4ZCN, his home call.

Other amateurs active from the area are VP8 8LR, ML, PTG (mainly CW) and WA.

CARDS

The ever-obliging Joe W3HNK, can get cards for those that are really desperate for the unusual USSR calls of EN4L, LY4L and UX4L. Joe is not the QSL Manager for these stations and they should be routed through the Box 88, Moscow Bureau from the respective WIA Bureaus.

WHERE IS HE?

Ken G3N8C, present QSL Manager for George VE3FXT, wishes for information on his whereabouts. He has received no logs but lots of cards which he cannot answer. Anyone hearing George could ascertain details of his whereabouts and advise him of Ken's predicament and also advising Ken would be appreciated.

ONE SIXTY METRES

Ron VK3BEE, a very keen enthusiast of this band, moved QTH to the wide open spaces at the beginning of the year. His new QTH is in the vicinity of Cockatoo, a delightful area in the Dandenong Ranges, east of Melbourne.

Ron's new QTH is plagued by 11 kV power lines. By careful selection of the symmetry of locating his low band dipole at 25 metres, he has alleviated the power line noise and has worked and heard a multitude of stations, working and listening on an irregular basis due to the chores of moving into a new home and of course having the hassle of working for a living.

Ron states, "This year in particular, the Equinox season has been very good for stations on the east coast of Australia. Good regular openings and at times excellent conditions where signals into the USA, (particularly the east, central and west coast areas) have been S9 for up to two hours".

Ron also reports that "signals into Canada and Alaska regions with a consistent path into Japan, Eastern USSR and excellent signals into Europe have been experienced".

What Ron has worked and heard this year up until the middle of April follows:

- WORKED CW-AM:** DJ8WL, IT9ZGY, KX6DS, P29PR, RAD3DX and UBA9JX.
- PM:** J0PCAK, JA1CQM, JAZXW, JATJCK, JASYBA, KHEAT, KLTJ, NIACH, P29PR, UJAKBW, UZCOWO, VS6DO, W1CF and W1TB.
- WORKED SSB-AM:** P29PR.
- PM:** N6TRI7, NK7U, P29PR, UZCOWO, W0VZ, W0KEA and W0T0EV.
- HEARD CW-AM:** EN4L, DL9SR, G3BQJ, G3SSZA, HB9BC, KH6CC, LZ2CJ, RA3LW, RF6AQ, RT4UA, SM6CYP, UBS5IG, UDB0C and X3XGQ.
- PM:** H4AJA and VE3BV.
- HEARD SSB-AM:** HB9ABO, LZ1KOZ, UDS0DE and YU1AA.
- PM:** VE7BS.

Ron mentions that many more stations were heard in the mornings, some as late as one hour after sunrise, but they have not been noted.

Thanks Ron, for your contribution, good luck in settling in to the new abode and we hope to hear more from you when you raise the dipole to 35 metres and erect the pair of 30 metre verticals.

FOOXX ACTIVE AGAIN

Whilst writing these notes, a note from Kip W6SZN, arrived advising that the licence, landing permission and other formalities had been obtained for a five operator, five or six day operation onslight from Clipperton beginning on the second of last month.

The operation is again under the banner of the Clipperton DX Club with the operators being AI6V, N7NG, W6OAT, W6RGG and W6SZN. Two stations were scheduled to be operating both modes 24 hours per day and particularly looking for those that missed out last time including the areas of Europe, USSR, Middle East and Africa.

Good luck to those that acquired it for a new country and it is to be hoped that the 'geological' operators that have it under their belt gave the newcomers to the DX bands a go.

SUDAN

ON7TJT, will be active from Sudan until the end of next month. QSL to the home QTH or via your bureau.

PIRATED CALL-SIGNS

Unfortunately, this is becoming a regular segment of the column. Anyone who worked SU7AC after 1969, worked a 'pirate'. The call was held by Yves Anatole F9GY and has not been reissued although it has been known to be have been used, but not of late.

The call signs of Paul FBH and his wife's allocations of TB8AK, SU7AW, SR8AK and 6W8AW are currently being pirated.

Another pirated call sign is 3A0GB. The call was legitimately used by W2GBX in 1971. Since 1978 no 3A0 licenses have been issued to visitors.

SAO TOME

Luis S92LB, (on my much wanted list) is still quite active and is apparently working most parts of the world excluding the Pacific, due to conditions. He is still appearing around 14.183 MHz at 2130 UTC and by all reports working into Europe and particularly the USA. QSL to his home QTH, he has no manager.

EXPLANATION

Did you work XERJTW recently? Well, he was a legitimate call sign and here is the story as printed by Bob WSKNE, Editor of QRZ DX.

"During the CQ WPX Phone Contest there were several reports of a station signing XERJTW/XEX, a call sign that was a bit unusual, some thought it was a phoney. AA5B, the operator of XERJTW, tells the story:

"The call XERJTW (yes, it is strange) was assigned to me by the Mexican government for my use while visiting the country until mid-1996. QSLs should go to my home address. The government has just recently established formal procedures for obtaining temporary radio permits and with any luck, call sign assignments will improve.

"I operated from El Sauz during the WPX Phone Contest using just a TS930 and an 80 metre dipole up at eight metres and made 520 QSOs on 80, 40 and 20 metres. At least 450 of the people I contacted asked for two repeats of the call, 200 wanted a detailed explanation, 100 accused me of being a pirate, and 50 refused to log the QSO (their loss, since I was the only XEO on during the contest).

"Intentional jamming occurred but was infrequent. After 10 hours, I called it quits and drove home (a 950 kilometre drive) to be with my family for Easter.

An interesting story and it pays to log all calls one receives. One never knows when it could be a good one.

SIXTY YEARS

The Dominican Republic are celebrating 60 years of the hobby by using the special call W6BROD until the end of the year. For both modes QSL to PO Box 1157, Santo Domingo, Dominican Republic.

INDIAN OCEAN EXPEDITION

Joe W6VNR, is still looking for amateurs and their wives to join him and his wife on a DX tour of the Indian Ocean. Any adventurers need apply to Joe at his Call Book QTH.

Whilst on the subject of the Indian Ocean it is hoped that the Indian authorities, with the assistance of their Prime Minister Rajiv V2PUG, can activate the Andamans as it is a much needed country and is climbing high on the wanted list. Maybe Joe, if he gets his party together may be allowed to operate from there or the Indian Society maybe able to launch their own onslaught to assist the DXers. It would create excellent international relations with all countries and would have the backing of the major DX Foundations.

See the Contest Column, this issue, for the positive steps VK5QX has made in an attempt to get Andaman and Nicobar on the air. This is an approach from a different angle — let's hope that it may bring some results!

WARC BANDS

Fred VK4RF, reports that he has notched up 80 countries on 10.1 MHz running 85 watts into a dipole at nine metres.

Some of the more interesting countries Fred has contacted on this band are: 424, 584, 807, 9H, 9Y4, C3C, CT2, CX, EA68 and 9, EI, GF, SM, GJ, GU, G80, G82, ISO, J28, KP4, CA, PJ, FM, TG, TG3, T32, ZC2A, VP2M, VP9, VS6, VV, ZC4, ZL7 and 8 and ZS6.

Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

DX CONVENTION

The Australian Radio DX Club will be holding a DX Convention on 7th to 9th June, at the Rawson Holiday Resort, in Gippsland. This is about two hours drive from Melbourne, in the foothills of the Great Dividing Range. I believe that there will be ample opportunity to do some DXing as there are no powerlines or interference, an ideal location. Besides that, I believe as well, that there are to be scenic trips arranged to nearby historic towns, such as Walhalla. We wish all participants a good weekend, with plenty of DX catches.

The accompanying photograph this month is of Don Rhodes VK3DMR, of Narra Glen, Victoria, met him at last year's Convention. Don is originally from Leeds, York. He is a monitor for *Deutsche Welle* the German External Service. We chat occasionally on 80 metres, swapping our observations.

Well, that is all for this month. All the best of winter listening and good DX. — Robin VK7RH.

VE3SR LOSES COURT BATTLE

The judge hearing the suit brought against Jack Ravenscroft VE3SR, seeking damages for interference to a neighbours electrical appliances from his amateur radio operations, has decided in favour of the neighbour, bringing the suit. (See earlier report, AR April p8).

The judge granted a permanent injunction prohibiting VE3SR from transmitting radio signals from his property and assessed damages and costs amounting to Can\$2558. The judge said that while Jack had a legislative right to use his equipment because he was licensed by the Canadian DOC, if he should interfere with the enjoyment of his neighbours electronic equipment then he is liable to a civil suit for nuisance. The unexpected outcome of the suit is a severe blow to the amateurs of Canada, and poses a threat to the operators of any licensed radio transmitters in that country.

VE3SR was given 10 days in which to appeal against the decision.

From The ARRL Letter, 11th April 1996

AMATEURS HELP HOMELESS AND HUNGARY

Amateur radio was selected to provide communications for *Hands Across America*, on 26th May 1986. It was anticipated that 6 000 000 Americans would join hands in a line stretching over 4000 miles from New York City to Los Angeles. A group of people, which sponsored the US Aid for Africa last year, and co-sponsored by Bill Cosby, Kenny Rogers, Pole Rose and Lily Tomlin, designed this benefit to aid the homeless and hungry in America. The National Communications co-ordinator was Charlie Kosman WB2NQV.

In 1984, Charlie organised communications for the well-known Olympic Torch Run across America, which last 82 days in the longest running net assembled for a special event.

For *Hands Across America*, Charlie needed amateur operators every mile of the 4100 mile link, as well as 210 command posts — between 4300 and 4500 amateurs equipped with VHF and/or UHF portable equipment. Each participating amateur was expected to be available for about six hours.

From The ARRL Letter

SILENT KEY

It is sad to report the passing of Nick Percival 9Y4NP, President of the Trinidad and Tobago Amateur Radio Society and an active supporter of the IARU.

During preparations for WARC 79, Nick persuaded the Telecom Administration in Trinidad to fully support the IARU position, and in so doing, guaranteed that the IARU original position was actually included as a proposal from a member of the ITU. Nick's efforts, coupled with those of amateurs in other countries, meant that WARC 79, amateurs not only retained their allocations, but also obtained new ones.

Many Australian amateurs would be familiar with Nick on the HF bands, and he was a guest at the WIA 75th Anniversary Dinner last November.

From The ARRL Letter

eral Republic of Germany, or to their Australian representative — Howard R Moore, 33 Brooklyn Avenue, Salisbury, SA. 5108.

OFF THE AIR

And talking of changes, there was an outcry recently after the BBC World Service announced that it was terminating the popular program — *Letterbox*. It was scheduled to be aired for the last time at the end of April. This program was a forum for World Service listeners to air their views regarding the output from Bush House — the home of the BBC External Services. At the deadline time (mid-April), the BBC has not so far announced any change of heart, although they indicated that they may review a replacement program in future. In mid-March, *Monitor* was also taken off. This was a summary of what the various electronic media were saying on current events. So it does appear that there is a new broom sweeping Bush House.

Incidentally, there has been a re-timing of one of the releases of *Waveguide*, a program that is to assist the listener to hear the BBC World Service. It has been re-scheduled from 0430 UTC Wednesdays to 0445 Mondays. The other releases at 0750 Sundays and 1115 Tuesdays are unaffected. The *DX-Partyline* on Radio HCJB recently celebrated its 25th Anniversary, on the 19th May. You can hear it at 0930 UTC Mondays and Saturdays and at 0700 UTC on Wednesdays.

SIGNALS NOTED

Around mid-winter, it is possible to hear stations on the 41 and 49 metre bands around 0200 UTC, which corresponds to my local midday, in Tasmania. Signals from Europe are coming in across, or close to Antarctica. I realise that SWL DXers in VK4 and VK8 cannot hear this unusual propagation mode, because they are too far north, although I have been reliably informed that they have been heard on the Gold Coast. When I was in Brisbane about three years ago, it was evident to me that these signals were absent, although I was observing them in Tasmania. Signals from Asia were noted, which were absent down here, yet that isn't really surprising, considering the location of Brisbane.



Recently, I obtained a subscription to the International Listening Guide. This is a basic directory of international broadcasting, being published four times a year to coincide with the propagational alterations. I must state that I have found it invaluable, especially in the identification of broadcasters. *How is this possible?* Well, the survey is divided into two sections: the first being a summary of English language broadcasts from the External Services, while the second section is a World Frequency Survey.

As I am writing this, we are at the height of the Libyan Crisis. By using this publication, I have been able to follow subsequent developments. For example, by looking up the entries in the first section, I was able to find what broadcasters were having a newscast at that particular hour. Once I have found the station I require, it is easy to use the second section to ascertain what frequencies are being utilised, particularly to this region. Say at 0400 UTC, we see that the *Voice of Turkey* is having an English newscast on 9.560 and 9.730 MHz. The first channel is clear, but there is another station on 9.730. By looking up that channel in the second section, we see that *Radio Havana* is broadcasting in Spanish. It also tells me that Ankara is broadcasting on that channel to Asia.

JAMMERS ARE ALWAYS THERE

As one scans across the broadcasting allocations, frequently jammers are heard, with their distinctive CW identification. On 9.520 MHz, the jammers are seemingly ever-present, making it impossible to identify who is being jammed. The survey tells me that it is Radio Liberty, the US backed clandestine station in Russia. The service is almost continuous, explaining why the jammers are always there. The survey also gives the transmitter sites and what operational hours they use. The West German sites are almost exclusively used on 9.520 MHz, yet between 1900 and 2100 UTC, RL uses their Spanish site.

The *International Listening Guide* is compiled and published in West Germany by Bernd Friedwald. These are put together after the commencement of each broadcasting service, compiled from monitor's observations and the survey is then mailed out in a fortnight to three weeks of the commencement. The SWL/DXer than has, at their fingertips, up-to-date information. Each copy costs \$A6, yet a subscription for the whole year costs \$A20.

SURVEYS

Personally, I have found it superior to the *World Radio TV Handbook*, as far as up-to-date, accurate schedule information. The handbook has a plus in that it contains information on the smaller broadcasters, servicing domestic audiences which is not generally contained in the ILG surveys. However I mainly now rely on the ILG observations, supplemented by monthly DX loggings from the Southern Cross DX Club and Australian Radio DX Club.

Looking at the surveys, I am somewhat amazed to find that a channel will sometimes have two broadcasters, targeting the same area, with the same language at identical times. On 11.810 MHz, we find that Bucharest and Radio Korea are both beamed to South America in Spanish. This is at 2400 UTC. There are other instances that are easily heard, and one has to listen carefully before being able to correctly identify the station. It must make it difficult for listeners within these target areas. On the whole, there is co-operation between the various broadcasting organisations, yet this occasionally does not happen. This happens where the countries often don't afford diplomatic recognition of each other.

If you are interested in the *International Listening Guide*, the address to write to is: DX Listeners Service, Merianstrasse 2, D3588 Homburg, Fed-

This I have done, and now I have passed copies of the correspondence to our DX Editor, Ken VK3AH, so that he may be able to tell the story in his column. I have related the above material for general interest purposes. It is quite amazing just what interesting people you can meet whilst travelling, though. Doctor Singh did seem interested to the extent that he thought he might like to take out an amateur radio licence. I certainly hope he does and I for one would be thrilled to be able to speak to him again and see just how much the correspondence has brought to the brotherhood of our hobby. I might just add that I consider myself very fortunate as I was able to enjoy his company for almost two hours. The aircraft was detained from departure and, having boarded, I found myself seated next to him after having been speaking with him in the boarding lounge. So it certainly is an ill wind that blows no good. An experience which I would not wish to have missed. Doctor Karan Singh was travelling in the USA on a lecture tour during which he was speaking on the subject of Indian politics, in which he is of course he is extremely well-versed. Just before we parted I asked him what he would say if he had any message to give to people in Australia. His answer was *Remember, India is much closer to Australia than you think*. He felt that our two countries did have a good relationship, however he also thought that we could do more to strengthen our relationships.

Surely our hobby of amateur radio can do much towards this end. I wonder now that you know about Doctor Karan Singh if you might learn more through asking your contacts in VU-land about him. Doctor Singh has visited Australia and told me that he found Australia very interesting and enjoyable. The historical information regarding him was taken from a small biographical pamphlet which he kindly gave to me before we parted company in Los Angeles.

So that finalises my notes for this month. I wonder also whether or not you did experience any form of unusual or enhanced propagation caused by the passing of Halley's Comet while you were operating on any of the bands?

(I believe that it has been blamed for many other effects with the weather, both hot and cold, being no exception. I recently also heard that another reason for unusual weather conditions was the proliferation of all those computers!).

73 from Ian VK5QX

27th ALL ASIAN DX CONTEST

The purpose of this contest is to enhance the activity of radio amateurs in Asia and to establish as many contacts as possible during the contest periods between Asian and non-Asian stations. It is supported by the Ministry of Posts and Telecommunication of Japan.

Contest Period:

Phone — 48 hours from 0000 UTC 21st June 1986 to 2400 UTC 22nd June 1986.

CW — 48 hours from 0000 UTC 23rd August 1986 to 2400 UTC 24th August 1986.

Band: Amateur bands under 30 MHz.

Entry Classification:

- 1 Single operator, 1.9 MHz band (CW-only).
- 2 Single operator, 3.5 MHz band (including 3.8 MHz band, and so forth on).
- 3 Single operator, 7 MHz band.
- 4 Single operator, 14 MHz band.
- 5 Single operator, 21 MHz band.
- 6 Single operator, 28 MHz band.
- 7 Single operator, Multi-band.
- 8 Multi-operator, Multi-band.

Power, Type of Emission and Frequencies: Within the limits of own station licence.

Contest Call: Phone ... CQ Asia. CW ... CQ AA.

Exchange:

For OM stations — RS(T) report plus two figures denoting operator's age.

For multi-operator stations — RS(T) report plus two figures 00.

Restriction on the Contest:

No contact on cross-band.
For participants of single operator's entry — transmitting two signals or more at the same time, including cases of different bands is not permitted.

For participants of multi-operator's entry —

transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.

Points and Multipliers

Contacts among Asian stations and among non-Asian stations will neither count as a point or a multiplier.

For non-Asian stations — a perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be counted as follows for point scores: 1.9 MHz band ... 3 points; 3.5 MHz band ... 2 points; other bands ... 1 point.

Multipliers are the number of different Asian Prefixes worked on each band, according to the WPX Contest rules. Eg JS1ABC/7 will count for prefix JS7.

Scoring: The sum of the contact points on each band times the sum of the multipliers on each band.

Instructions on the Summary and Log Sheet

Summary sheet — write in your declaration and signature to give evidence of following the rules of the contest, together with your DXCC country, call sign, entry class, multiplier by band, point by band and total score.

Log sheets — use a separate sheet for each band and fill in all times in UTC. Fill in the blanks of multiplier by countries or prefixes only the first time on each band.

Awards: Certificates will be awarded to the highest scorers in each category on each continent and medals will be awarded to highest scorer in the single operator multi-band and multi-operator multi-band sections.

Reporting: Submit a summary sheet and logs of only one classification to JARL, All Asia DX Contest, PO Box 377 Tokyo Central, Japan. Please indicate phone or CW on the envelope. Envelopes should be postmarked no later than 30th July for the phone-section and 30th September for CW.

Disqualification: Violation of the contest rules, false statements in the report or taking points from duplicate contact on the same band in excess of two percent by the total will be deemed reasons for disqualification.

Announcement of Results: Phone about February 1987 and CW about April 1987.

Countries List of Asia: A4, A5, A6, A7, A9, AR, BV, EP, ER, HL/IH, HS, HZ/TZ, JA-JS/7J, JD1 (Ogasawara Island), JT, JY, DQ, DZ, TA-5, UA, UJ/UUV/UU, UZ9-0 (ASRFSF), UD, UF, UG, UH, UI, UJ, UL, UM, VS6, VU, VU (Andaman & Nicobar Islands), VU (Laccadive Islands), XU, XW, XX9, XZ, YA, YL, YK, ZC4, 1S (Spratly Islands), 3W/XV, 4S, 4W, 4X/4Z, 5B4, 7O (S Yemen), 8J, 9K, 9M2 (W Malaysia), 9N, 9V (Singapore), J2A (Abu Ai)

1985 RESULTS

Last year VI6DU was awarded a medal from JARL as the continental leader in Oceania for the Multi-op, mixed mode and complete exchange.

Certificate winners in VK were: VK6AOK, VIZPS, VK2XT, VK2PFQ, VK2APK, and VI6DU. Other VK participants in the contest were: VK2KPF, VK5NOD, VIZPWS, VK4NAS, VK2DLB, VK3DVT, VK2BPC.

FIRST IARU HF CHAMPIONSHIP

The contest period is for 24 hours duration. Operating time for both single and multi-operator stations is 24 hours.

Operation may take place on 1.8-30 MHz. The 10, 18 and 24 MHz bands may not be used for contest QSOs.

IARU member society headquarters stations count as additional multipliers. These stations will be recognisable by the unique exchange they will transmit (see below).

For those not familiar with ITU zones around the world, a listing of countries and their corresponding ITU zone is included in this column. Proge forms, including a map are available from ARRL/IARU Secretariat, please send enough IRCs to cover return postage.

Eligibility: All licensed amateurs world-wide.

Objective: To contact as many other amateurs, especially IARU member society HQ stations, around the world as possible using 1.8 to 30 MHz, excluding the 10, 18, and 24 MHz bands.

Date: Second full weekend of July (12-13th July 1986).

Contest Period: 1200 UTC Saturday until 1200 UTC Sunday. Both single and multi-operator stations may operate for the entire 24 hour period.

Categories:

a Single operator — phone-only, CW-only and mixed mode. One person performs all operating and logging functions. Use of spotting nets is not permitted. All operators must observe the limits of their operators' licenses at all times. Single-operator stations are allowed only one transmitted signal at any given time.

b Multi-operator — single transmitter, mixed mode only. Must remain on a band for at least 10 minutes at a time. Only one transmitted signal allowed at any given time. (Exception: Only IARU member society HQ stations may operate simultaneously on more than one band, with one transmitter on each bandmode. Only one HQ station call sign per member society per frequency band is permitted). All operators must observe the limits of their operators' licenses at all times.

Contest Exchange: IARU member society HQ stations send signal report and official IARU member society abbreviation. All others send signal report and ITU zone. A complete exchange must be logged for each valid QSO.

Valid Contact: The same station may be worked only once per band/mode. Mixed mode entries may work a station once per mode (but only in the generally accepted portions of that band for that mode. Note: Reworking a station in the phone portion of the band on CW is not permitted). Example: On any band, a station may be worked once on phone and once on CW (in the CW segment) for additional QSO credit. However, this counts as only one band/mode. Cross mode, cross band and repeater QSOs do not count. Where contest preferred segments are incorporated in regional band plans, participants are requested to observe them.

QSO Points:

a Contacts within your ITU zone, as well as QSOs with all IARU HQ member society stations, count as one point.

b Contacts within your continent (but different ITU zone) count three points.

c Contacts with a different continent count five points.

Multipliers: Total number of ITU zones plus IARU member society HQ stations worked on each frequency band. (Note: HQ stations do not count for multipliers).

Scoring: Multiplier times total number of QSO points.

Reporting:

a All entrants are encouraged to use the forms available from the ARRL/IARU Secretariat for return postage.

b Logs must indicate times in UTC, bands worked, mode and complete exchange. Multipliers should be marked clearly in the log. Cross check sheets (dupe sheets) are required of more than 500 total QSOs are made.

c Entries must be postmarked within 30 days after the contest (13 August 1986). Any entry received after mid-October 1986 may not be received in time to be included in the printed results. Mail to 225 Main Street, Newington, CT 06111, USA.

Awards: A certificate will be awarded to the high-scoring CW-only, Phone-only mixed-mode and multi-operator entrant in each US State, ITU Zone and DXCC Country. In addition, achievement-level awards will be issued to those making at least 250 QSOs having a multiplier total of 10 or more. Additional awards may be made at the discretion of each country's IARU member society.

Conditions of Entry: Each entrant agrees to be bound by the provisions of these rules, by the regulations of higher licensing authority and by the decisions of the ARRL Awards Committee, acting for the IARU International Secretariat. Useful contest disqualification criteria apply.

PREFIX, CONTINENT AND ITU ZONE

Prefix	Continent	ITU Zone	Prefix	Continent	ITU Zone
A4	AS	37	TI	NA	11
A2	AS	32	TF	AF	47
A4	AS	39	TK	EU	28
A5	AS	41	TL	AF	47
A6	AS	39	TM	AF	52

A7	AS	39	TR	AF	52	FO	NA	10	VW	OC	63	KX	OC	65	AS	AS	41
AP	AS	39	TT	AF	47	ICW	NA	10	VW	OC	63	LA	OC	14	4U(TU)	EU	28
AV	AS	41	TU	AF	46	OC	OC	63	VU	AS	41	LU	SA	14, 16	4U(UH)	EU	28
BY	AS	33, 42, 43, 44	TZ	AF	46	PP	NA	09	VU7	AS	41, 48	LZ	EU	27	4V	AS	06
C2	OC	65				FR	AF	53	XE	NA	10	OA	SA	12	4X	NA	29
C3	EU	27	UAI, 3, 4		15, 20	FW	OC	62	XEA	NA	10	OD	SA	12	4Y	AS	06
C4	AF	46	EU	29, 30		G-GW	EU	27	XU	AS	49	OE	EU	28	5B	AF	53
OC	NA	11	UAI(FU)	EU	29	HA	OC	51	XW	AS	49	OF-CH	EU	18	5C	AF	46
OC	AF	53	UA-UZ	EU	29	HA	OC	51	XW	AS	49	ON	EU	27	5D	AF	46
OC	SA	12, 16	UAI-UZ	EU	29	HC	SA	12	Y2-B	EU	28	OX, XP	NA	5, 75	5E	AF	46
CEBA	SA	62	UB	EU	29	HH	NA	11	YA	AS	40	OZ	EU	18	5F	OC	62
CEBX	SA	14	UC	EU	29	HI	NA	11	YB	OC	51, 54	P2	OC	51	5G	AF	46
CEBX	SA	14	UD	AS	29	HL	NA	11	YC	OC	56	PA	EU	27	5H	AF	46
CEBX	SA	14	UE	AS	29	HM	NA	11	YD	OC	56	P2, 3, 4			5I	AF	46
CEBX	SA	14	UF	AS	29	HN	NA	11	YE	OC	56	9	SA	11	5J	AF	46
CEBX	SA	14	UG	AS	29	HO	NA	11	YF	OC	56	P6, 7, 8			5K	AF	46
CEBX	SA	14	UH	AS	29	HP	NA	11	YG	OC	56				5L	AF	46
CEBX	SA	14	UI	AS	29	HR	NA	11	YH	OC	56				5M	AF	46
CEBX	SA	14	UJ	AS	29	HS	EU	28	YI	OC	56				5N	AF	46
CEBX	SA	14	UK	AS	29	HU	EU	28	YJ	OC	56				5O	AF	46
CEBX	SA	14	UL	AS	29	HV	EU	28	YK	OC	56				5P	AF	46
CEBX	SA	14	UM	AS	29	HZ, TZ	AS	39	YL	OC	56				5Q	AF	46
CEBX	SA	14	UN	AS	29	I, 150	EU	28	YM	OC	56				5R	AF	46
CEBX	SA	14	UO	AS	29	J2	AF	46	YN	OC	56				5S	AF	46
CEBX	SA	14	UP	AS	29	J3	NA	41	YO	OC	56				5T	AF	46
CEBX	SA	14	UQ	AS	29	J4	AF	46	YV	OC	56				5U	AF	46
CEBX	SA	14	UR	AS	29	J5	AF	46	YW	OC	56				5V	AF	46
CEBX	SA	14	US	AS	29	J6	NA	11	YZ	OC	56				5W	AF	46
CEBX	SA	14	UT	AS	29	J7	NA	11	ZA	OC	56				5X	AF	46
CEBX	SA	14	UV	AS	29	J8	NA	11	AB	OC	56				5Y	AF	46
CEBX	SA	14	UW	AS	29	J9	NA	11	AC	OC	56				5Z	AF	46
CEBX	SA	14	UX	AS	29	KA	OC	56	AD	OC	56				6A	AF	46
CEBX	SA	14	UY	AS	29	KB	OC	56	AE	OC	56				6B	AF	46
CEBX	SA	14	UZ	AS	29	KC	OC	56	AF	OC	56				6C	AF	46
CEBX	SA	14	VA	AS	29	KE	OC	56	AG	OC	56				6D	AF	46
CEBX	SA	14	VB	AS	29	KF	OC	56	AH	OC	56				6E	AF	46
CEBX	SA	14	VC	AS	29	KG	OC	56	AI	OC	56				6F	AF	46
CEBX	SA	14	VD	AS	29	KH	OC	56	AJ	OC	56				6G	AF	46
CEBX	SA	14	VE	AS	29	KI	OC	56	AK	OC	56				6H	AF	46
CEBX	SA	14	VF	AS	29	KJ	OC	56	AL	OC	56				6I	AF	46
CEBX	SA	14	VG	AS	29	KK	OC	56	AM	OC	56				6J	AF	46
CEBX	SA	14	VH	AS	29	KL	OC	56	AN	OC	56				6K	AF	46
CEBX	SA	14	VI	AS	29	KM	OC	56	AO	OC	56				6L	AF	46
CEBX	SA	14	VJ	AS	29	KN	OC	56	AP	OC	56				6M	AF	46
CEBX	SA	14	VK	AS	29	KO	OC	56	AQ	OC	56				6N	AF	46
CEBX	SA	14	VL	AS	29	KP	OC	56	AR	OC	56				6O	AF	46
CEBX	SA	14	VM	AS	29	KQ	OC	56	AS	OC	56				6P	AF	46
CEBX	SA	14	VN	AS	29	KR	OC	56	AT	OC	56				6Q	AF	46
CEBX	SA	14	VO	AS	29	KS	OC	56	AU	OC	56				6R	AF	46
CEBX	SA	14	VP	AS	29	KT	OC	56	AV	OC	56				6S	AF	46
CEBX	SA	14	VQ	AS	29	KU	OC	56	AW	OC	56				6T	AF	46
CEBX	SA	14	VR	AS	29	KV	OC	56	AX	OC	56				6U	AF	46
CEBX	SA	14	VS	AS	29	KW	OC	56	AY	OC	56				6V	AF	46
CEBX	SA	14	VT	AS	29	KX	OC	56	AZ	OC	56				6W	AF	46
CEBX	SA	14	VU	AS	29	KY	OC	56	BA	OC	56				6X	AF	46
CEBX	SA	14	VV	AS	29	KZ	OC	56	BB	OC	56				6Y	AF	46
CEBX	SA	14	W	AS	29	LA	OC	56	BC	OC	56				6Z	AF	46
CEBX	SA	14	WA	AS	29	LB	OC	56	BD	OC	56				7A	AF	46
CEBX	SA	14	WB	AS	29	LC	OC	56	BE	OC	56				7B	AF	46
CEBX	SA	14	WC	AS	29	LD	OC	56	BF	OC	56				7C	AF	46
CEBX	SA	14	WD	AS	29	LE	OC	56	BG	OC	56				7D	AF	46
CEBX	SA	14	WE	AS	29	LF	OC	56	BH	OC	56				7E	AF	46
CEBX	SA	14	WF	AS	29	LG	OC	56	BI	OC	56				7F	AF	46
CEBX	SA	14	WG	AS	29	LH	OC	56	BJ	OC	56				7G	AF	46
CEBX	SA	14	WH	AS	29	LI	OC	56	BK	OC	56				7H	AF	46
CEBX	SA	14	WI	AS	29	LJ	OC	56	BL	OC	56				7I	AF	46
CEBX	SA	14	WJ	AS	29	LK	OC	56	BM	OC	56				7J	AF	46
CEBX	SA	14	WK	AS	29	LM	OC	56	BN	OC	56				7K	AF	46
CEBX	SA	14	WL	AS	29	LN	OC	56	BO	OC	56				7L	AF	46
CEBX	SA	14	WM	AS	29	LO	OC	56	BP	OC	56				7M	AF	46
CEBX	SA	14	WN	AS	29	LP	OC	56	BQ	OC	56				7N	AF	46
CEBX	SA	14	WO	AS	29	LQ	OC	56	BR	OC	56				7O	AF	46
CEBX	SA	14	WP	AS	29	LR	OC	56	BS	OC	56				7P	AF	46
CEBX	SA	14	WQ	AS	29	LS	OC	56	BT	OC	56				7Q	AF	46
CEBX	SA	14	WR	AS	29	LT	OC	56	BU	OC	56				7R	AF	46
CEBX	SA	14	WS	AS	29	LU	OC	56	BV	OC	56				7S	AF	46
CEBX	SA	14	WT	AS	29	LV	OC	56	BW	OC	56				7T	AF	46
CEBX	SA	14	WU	AS	29	LU	OC	56	BX	OC	56				7U	AF	46
CEBX	SA	14	WV	AS	29	LV	OC	56	BY	OC	56				7V	AF	46
CEBX	SA	14	WW	AS	29	LU	OC	56	BZ	OC	56				7W	AF	46
CEBX	SA	14	WX	AS	29	LV	OC	56	CA	OC	56				7X	AF	46
CEBX	SA	14	WY	AS	29	LV	OC	56	CB	OC	56				7Y	AF	46
CEBX	SA	14	WZ	AS	29	LV	OC	56	CC	OC	56				7Z	AF	46
CEBX	SA	14	XA	AS	29	LV	OC	56	CD	OC	56				8A	AF	46
CEBX	SA	14	XB	AS	29	LV	OC	56	CE	OC	56				8B	AF	46
CEBX	SA	14	XC	AS	29	LV	OC	56	CF	OC	56				8C	AF	46
CEBX	SA	14	XD	AS	29	LV	OC	56	CG	OC	56				8D	AF	46
CEBX	SA	14	XE	AS	29	LV	OC	56	CH	OC	56				8E	AF	46
CEBX	SA	14	XF	AS	29	LV	OC	56	CI	OC	56				8F	AF	46
CEBX	SA	14	YG	AS	29	LV	OC	56	CJ	OC	56				8G	AF	46
CEBX	SA	14	YH	AS	29	LV	OC	56	CK	OC	56				8H	AF	46
CEBX	SA	14	YI	AS	29	LV	OC	56	CL	OC	56				8I	AF	46
CEBX	SA	14	YJ	AS	29	LV	OC	56	CM	OC	56				8J	AF	46
CEBX	SA	14	YK	AS	29	LV	OC	56	CN	OC	56				8K	AF	46
CEBX	SA	14	YL	AS	29	LV	OC	56	CO	OC	56				8L	AF	46
CEBX	SA	14	YM	AS	29	LV	OC	56	CP	OC	56				8M	AF	46
CEBX	SA	14	YN	AS	29	LV	OC	56	CQ	OC	56				8N	AF	46
CEBX	SA	14	YO	AS	29	LV	OC	56	CR	OC	56				8O	AF	46
CEBX	SA	14	YP	AS	29	LV	OC	56	CS	OC	56				8P	AF	46
CEBX	SA	14	YQ	AS	29	LV	OC	56	CT	OC	56				8Q	AF	46
CEBX	SA	14	YR	AS	29	LV	OC	56	CU	OC	56				8R	AF	46
CEBX	SA	14	YS	AS	29	LV	OC	56	CV	OC	56				8S	AF	46
CEBX	SA	14	YT	AS	29	LV	OC	56	CW	OC	56				8T	AF	46
CEBX	SA	14	YU	AS	29	LV	OC	56	CX	OC	56				8U	AF	46
CEBX	SA	14	YV	AS	29	LV	OC	56	CY	OC	56				8V	AF	46
CEBX	SA	14	YW	AS	29	LV	OC	56	CZ	OC	56				8W	AF	46
CEBX	SA	14	YZ	AS	29	LV	OC	56	DA	OC	56						



Awards

Ken Hall VKSAKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

AWARDS ISSUED RECENTLY

Worked All VK Call Areas (HF)
1448 David R Ellis ZL1BZL
1449 L R Baber ZL2FS
1450 L R Baber VK2RJ
1451 Lorenz M Perry WA7CQE/DV2
1452 Keith J M Reid ZS6BRD
1453 Giorgio Baldassari IK5ACO
1454 Vilo Kusal OK3MB
1455 Ruyji Nakayama JA0WRF

DXCC New Members

CW Sam Galea VK2AKP
126
Phone L R Baber VK2RJ
343
Open John Meagher VK2AMV
233

Worked All VK Call Areas (VHF)
166 Geoff Wilson VK3AMK (2m)
167 Ronald J Watkins VK3XOA (6m)
168 Andrew Martin VK3KAQ (2m)
Apology for omission from DXCC ladder in April

AR
Open Syd Moien VK2SG
292/22

CONGRATULATIONS

Ross Usher VK2ZRU, for being the first Australian to receive the WAC Award from the ITU with satellite endorsement.

BRISBANE AMATEUR RADIO CLUB AWARD

Requirement is to contact seven club members, or four club members plus the club station (VK4BA or VK4WK).

Club nets are held on Monday evenings, 26.445 MHz at 0930 UTC and Wednesday evenings on 146.550 MHz, at the same time.

To claim the Award send a log extract and \$1 to the Awards Manager, BARC Inc, PO Box 300, Darra, Qld. 4076.

Thanks to Bob Sample VK4CE, for this information.

LAWRENCE HARGRAVES AWARD

Illawarra Amateur Radio Society sponsor this award for radio amateurs.

Requirements are to have one contact with the club station VK2AMW, which will be activated on 28th and 29th June 1996. All HF bands, two metres, 70 cm and 23 cm EME are included in the planned weekend, working from the club's EME site, just west of Wollongong, on the Illawarra escarpment.

Send \$2 or four IRCs to the Award Manager IARS, PO Box 1838, Wollongong, NSW. 2500, quoting the following details:

Date, Time, Frequency, Mode, operator.

Thanks to Tony Mowbray VK2KAJ, the Club's Broadcast Officer, for supplying this information.

DIPLOMA FRACAP

The award is sponsored by the Radio Amateurs of Central America and Panama.

Two-way confirmed contact is required on any band, any mode, with each of the six member countries.

The countries are — Guatemala; El Salvador; Honduras; Nicaragua; Costa Rica and Panama.

Only contacts after 16th August 1995 are valid for this award and only contacts with amateurs affiliated to a radio club, member of FRACAP, are valid.

QSLs or a GCR list, certified by the radio club of which the applicant is a member should be sent, together with 10 IRCs or US\$5 to the Awards Manager of Radio Club de Costa Rica, Bengt Hallden T14BGA, Box 999, 3000 Heredia, Costa Rica.

Thanks to John Gough VK5QD, for this information.

JUBILEE INDUSTRY TRADE TRAIN SPECIAL AWARD

This is available for one contact with amateurs on the Trade Train.

A five-colour artists impression of the Jubilee 150 Trade Train en route through the SA countryside, with the award details on the map of South Australia together with the locations or whistle stops from which the stationary amateur station can be worked for the award and Jubilee 150 points make up this attractive award.

Signatory of the award is Mr Bob Ling Chairman of the Jubilee 150 Executive Committee and Managing Director of Hills Industries SA.

The award includes a documentary of the train's historic journey. The story will appear with written acknowledgment on the presentation of the award.

The award is offered to one contact QSL cards to Trade Train Award, WIA (SA), PO Box 1234, Adelaide, SA 5001. (Cost \$2 or four IRCs for packaging and postage) or direct to Graham



The Wireless Institute of S.A. and Hills Industries Limited

congratulate Sample

for catching the
JUBILEE INDUSTRY TRADE TRAIN

at

Chairman

Awards Manager

R. H. LING A.D.

G. C. HOLLIN - SAITH

No. _____ Date _____



In the space of three months the 250 m long train is travelling through 4000 km of S.A. country side visiting 20 country and metropolitan centres.

Eight specially designed exhibition cars housed 31 displays and demonstrations, a travelling showcase of

South Australian Commerce, Industry and Amateur Radio Communications, taking the state to the State, Australia and World wide. Welcome aboard!



The WIA, of S.A. acknowledges the support of the following Trade Train Companies.



Hortlin-Smith VK5AQZ, 2 Athol Avenue, Tranmere, SA. 5073.

CAPE WILLOUGHBY LIGHTHOUSE, KANGAROO ISLAND, JUBILEE 150 AWARD

Applications for this attractive award should include a one contact QSL card to *Kangaroo Island Award, Graham Hortlin-Smith VK5AQZ*, (address as above). Include \$2 or four IRCs for postage and handling.

One contact with the Jubilee 150 DXpedition to Cape Willoughby Lighthouse, Kangaroo Island, qualifies for this award.

The award is signed by the Mr Neville Cordes, Mayor of Kingscote, Kangaroo Island.

The award is four colours, designed overlay of the Cape Willoughby Lighthouse featuring a wealth of tourist attractions on Kangaroo Island including a short history of the Island's beginning as South Australia's first colony.

WIA 75 AWARD RICIPIENTS

588 John Ferrington VK2VOX
628 Jeanne Gilchrist ZL2BOD
629 Henri Vandevelde ON4VN
630 Gerhard Schumacher DJ7PB
631 R Chakravathy VU2TTC
632 Tom Ellis ZL3KN
633 Anne Griffiths ZL2BOV
634 Don McDonald VK5ADD
635 Mario Ambrosi I2MOP
636 Egbert Heretsen ONL4003
637 Kurt Brauer HB9AMZ/SWL
638 T Thornton VK2PJT
639 Pentti Lareva OH3TY
640 Wally Rueger KC9WQ
641 Anton Irawan YB5OY
642 Dieter Albrecht DL2KHB
643 Klaus-Peter Weinborner DK8DB
644 William Tanujaya YC0DNK
645 Ross W Forbes WB6GFJ
646 Charles K "Rusty" Epps W6OAT
647 Shinji Maeda JG6PCA
648 Hiroshi Harada JE4OJD
649 Eduard H Panosov YC2AFP
650 Denis Kien SM6OOI
651 Jukka Kovanen OH6-145 SWL
652 A Katarzynski VK4JXZ
653 Peter Dann VK3CPD
654 Lee Ping Kee VS6TQ
655 Margaret Schewin VK4AOE
656 Tom Weston KB7MJ
657 Soebijakto Adinegoro YC0BCA
658 T K Morrison VK3DYZ

BRISBANE AMATEUR RADIO CLUB AWARD

This is to Certify that on the _____ day of _____ 19____
SAMPLE
has fulfilled the conditions required to obtain the
Brisbane Amateur Radio Club Award.
Award To _____
Date _____

President _____ Anti Manager _____

FRANKSTON — MORNINGTON PENINSULA AMATEUR RADIO CLUB 10th ANNIVERSARY AWARD



FAMPARC takes great pleasure in presenting this award to _____ who has submitted satisfactory evidence of two-way radio contact with the required number of FAMPARC stations during one year.

President _____ Chairman Anniversaries Club _____

To obtain the FAMPARC Award see rules, page 43, May AR.

Kangaroo Island Cape Willoughby Lighthouse Jubilee 150 Award



The Wireless Institute of South Australia Inc. and the people of Kangaroo Island are pleased to award this certificate to



shortwave listener and world amateur communicator

Kangaroo Island is Australia's third largest island. It lies across the Gulf St. Vincent south-west of Adelaide, the South Australian capital. The Island is noted for its seal colonies and wildlife, its vast national parks, superb coastline and its historical heritage. It was the site of South Australia's first official settlement in 1836, and for thirty years before that was home for gangs of runaway convicts, ships' deserters, sealers and whalers. The Cape Willoughby Lighthouse commands a spectacular view of the Island's eastern shoreline and the busy shipping lanes to the north and south. It was built in 1852 and was South Australia's first. The historic lighthouse is 20.5 metres high on an elevation of 75 metres. It delivers 370,000 candlepower with a range of 23 nautical miles.



Congratulations to <u>Sample</u> operator	
AR/SWL	Station
Signed <u>[Signature]</u>	
Date _____	Cert. No. _____



The Wireless Institute of Australia (S.A. Div.) gratefully acknowledges the support of the Kingscote and Dudley District Councils, The Islander Newspaper and the KJ Jubilee 150 Committee.

NEED A POWER SUPPLY

Recently Don VK2TMP, was looking for (and still is) a power supply, and happened to mention the fact to a colleague. Said colleague, with a sly grin, handed Don an article and said it may be of interest to him. Following are excerpts describing the power supply???

The Itaipu hydro-electric project in SW Brazil is the largest installation of its type in the world and everything about it is gargantuan, including the transmission system which transmits 12 600 MW from the interior to the industrialised coast. The EHV voltage lines — 345, 500 and 750 kV, plus HVDC into a single package.

The project straddles the Parana River and will have 18 700 MW turbine/generators. These are the largest generator sets ever built and will have a total capacity, when running, of six times that of the Aswan High Dam Project on the River Nile, Egypt.

Thyristor valves, the largest of their kind, are

housed in clean-air, pressurised valve halls, which are basically immense Faraday cages, to prevent interference with telephone and control circuits from the intensive fields generated within the building. The thyristors are rated at 3 000 amps and require water-cooling. A water-treatment plant with a capacity of 1 804 cu metres per day supplies pure water in the amount of 1 116 cu metres a day for the valves. The water is demineralised and deoxygenated before use. Each valve has 96 series connected thyristors which are controlled via a fibre-optic triggering system.

Don states fascination, rather than interest was a more apt description of his feelings. "Just imagine thyristors rated at 3000 amps, requiring a water treatment plant to supply their cooling water, a massive 12600 MW and voltages of 345, 500 750 kV and ± 600 kV DC — some power supply!"

Contributed by Don Palmer VK2TMP from The Shire & Municipal Record, June 1985.



Pounding Brass

Marshall Emm VK5FN
Box 389, Adelaide, SA. 5001

CW FOREVER!

Following on the coincidences from last month's column — I received a poem from Hans VK5YX, and was to use it in this month's column, however, as coincidences would have it, the poem appeared in April AR, page 47. Hans received the poem by a very circuitous route from the Tucson IRL Amateur Radio Club in the USA. (Please read the poem below continuing.)

From a literary point-of-view it is only doggerel at best, but there are many who share the sentiments.

I number myself among those who regard CW as something more than a technique, something approaching an art form. Evidently it has now been elevated to a religion! I like the image of a Silent Key pulling that final lever. I guess there is a limited supply of words that rhyme with forever.

If I can stray slightly off the subject of CW for a moment, I was intrigued that the poem found its way here via a computer user group. The last version of my word-processing software incorporated a very good spelling checker. The current version has an improved spell and a thesaurus! I wonder if the state of the art in the USA includes a rhyming dictionary.

Brass pounders prefer CW to phone for any number of reasons, but there is always the knowledge that when it comes to the crunch, this antique mode is superior to phone. It may be that it doesn't have to come to the crunch. There are situations where CW can be superior even when conditions for phone are perfect.

Recent correspondence with Lindsay VK3ANJ, challenges phone operators. With a son in the Country Fire Authority, Lindsay is convinced that WICEN voice traffic nets are inefficient in comparison with CW nets. Having monitored a lot of the emergency WICEN traffic during the Ash Wednesday Disaster, I am inclined to agree. Given the amount of phonetic spelling and repetition required to pass a simple message on two metres, I suspect a pair of competent brass pounders would leave the mike-bashers for dead. Especially if the phone-ops included some of the operators I have heard who take the trouble to phonetically spell the word TANGO HOTEL ECHO!

Lindsay proposes a shootout. He has come up with a proposal for a contest between teams of phone operators and teams of CW operators to resolve the issue once and for all. Each team would consist of eight operators, one from each call area, and the contest would involve relaying a message from VK3 to VK1, via VK7, 5, 6, 8, 4 in that order. Winners would be judged on accuracy of text and time of receipt in Canberra.

The idea has a lot of merit, but I see some problems with the proposed format — for example, waiting team-members could sandbag earlier transmissions several times (which, of course, would tend to favour the CW operators). And who would you get to judge the results?

Maybe the judging wouldn't be too much of a problem if you got a non-amateur, non-technical person with some interest in communications to do it — like perhaps the Minister for Defence. And

the sandbagging possibilities could be overcome by making it a point to point exchange, with a CW and phone operator in close proximity at each end.

What do you think? Please let me know, and if there is enough interest I will see if I can get the WIA to organise it.

While we are on the subject of contests, it appears to me that, given the size of the amateur population in Australia, the two contests of most interest to CW operators, the RD and the John Moyle, present certain disadvantages. The RD demands an entire weekend, which limits the scope of a CW-only operator. The JM offers a six-hour section, but demands the effort of setting up a portable station for the sake of those six hours (or you can use the home station and try to work three times as many stations).

Both of the cited contests have to cater for a lot of people with varying interests — so they become quite complex in terms of rules.

I propose a CW Sprint. An all-out three-hour CW contest on 80 metres on a Saturday night. Again, if you like the idea (or object to it) drop me a line.

Finally, in case any phone operators have taken offence to anything in this column I had better say that I am not a CW crank; any apparently disparaging comments were intended only to promote competition. To prove it, I will gladly enter an HF phone sprint if someone would like to organise it.

73 till next month.

AR

RADIOTELEGRAMS

STATION	CALL SIGN	FREQ kHz	HOURS UTC	REMARKS
ADELAIDE-RADIO	VIA	500	Continuous	Watch calls and replies
		472	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4272.5 6463.5	Hx Hx	As required As required
BRISBANERADIO	VIB	500	Continuous	Watch, calls and replies
		435	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4230.5 6351.5	Hx Hx	As required As required
BROOMERADIO	VIO	500	Continuous	Watch, calls and replies
		440	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4323.6 6407.5	Hx Continuous	As required Guards 6 MHz (Ch 5-6), 8 MHz (Ch 5-6)
CARNARVON-RADIO	VIC	500	2300-1200	Watch, calls and replies
		476	2300-1200	Primary working frequency
		512	2300-1200	Supplementary calling frequency
		4323 6407.5	Hx 2300-1200	As required Guards 6 MHz (Ch 5-6)
DARWIN-RADIO	VID	500	Continuous	Watch, calls and replies
		445	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4272.5 6463.5 6467	Hx Hx Continuous	As required As required Guards 6 MHz (Ch 5-6)
ESPERANCERADIO	VIE	500	2300-1200	Watch, calls and replies

MELBOURNE-RADIO	VIM	435	2300-1200	Primary working frequency
		512	2300-1200	Supplementary calling frequency
		4323.6 6407.5	Hx Hx	As required As required
		500	Continuous	Watch, calls and replies
PERTHRADIO	VIP	430	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4228.5 6333.5	Hx Hx	As required As required
		500	Continuous	Watch, calls and replies
ROCKHAMPTON-RADIO	VIR	484	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		4229 6407.5 8597	Hx Hx Continuous	Ch 5-6 and 16 No watch kept Guards 6 MHz (Ch 5-6 and 16)
		500	Continuous	Guards 12 MHz (Ch 5-6 and 16)
SYDNEY-RADIO	VIS	12994	Continuous	Guards 16 MHz (Ch 5-6 and 16)
		16947.6	0600-1000	Daily Guards 16 MHz (Ch 5-6 and 16)
		16947.6		Daily Guards 16 MHz (Ch 5-6 and 16)
		22315.5	On request	Daily Guards 22 MHz (Ch 3-4 and 10)
ROCKHAMPTON-RADIO	VIR	500	2200-0730	Distress, emergency auto alarm receiver watch only
		4255.6	2200-0730	Guards 4 MHz (Ch 5-6 and 16)
		6333.5	Hx	As required
		500	Continuous	Watch, calls and replies
ROCKHAMPTON-RADIO	VIR	476	Continuous	Primary working frequency
		512	Continuous	Supplementary calling frequency
		440	Continuous	Secondary working frequency
		4245	1300-2100	Guards 4 MHz (Ch 5-6 and 17)
ROCKHAMPTON-RADIO	VIS	6464	0800-2200	Guards 6 MHz (Ch 5-6 and 17)
		8352	Hx	As required
		8521	Continuous	Guards 8 MHz (Ch 5-6 and 17)
		6464	0800-2200	Guards 6 MHz (Ch 5-6 and 17)

* Presently not in use.

** Secondary frequencies	VIS5	12952.5	Continuous	Guards 12 MHz (Ch 5-6 and 17) As required Guards 16 MHz (Ch 5-6 and 17)
	VIS49* VIS6	12979.5 17161.3	Hx 2100-1300	
	VIS62* VIS42	17136.4 22474	2100-1300 2200-0800	As required Guards 22 MHz (Ch 3-4 and 9) As required
	VIS43* VIS45	22495	2200-0800	
THURSDAY IS. RADIO	VII	500 488.5 512 4228.5 6333.5	Continuous Continuous Continuous Hx Continuous	Watching, calls and replies Primary working frequency Supplementary calling frequency As required Guards 8 MHz (Ch 5-6)
TOWNSVILLE-RADIO	VIT	500 420.5 512 4255.6 6463.5	Continuous Continuous Continuous Hx Continuous	Watch, calls and replies Primary working frequency Supplementary calling frequency As required Guards 8 MHz (Ch 5-6)

TRAFFIC LISTS

STATION	CALL SIGN	FREQ kHz	HOURS UTC
ADELAIDERADIO	VIA	472 6463.5 (Day) 472 4272.5 (Night)	0018; 0440; 0840; 1018; 1240 1640; 2040
BRISBANERADIO	VIB	435 6351.5 (Day) 435 4230.5 (Night)	0010; 0410; 0810; 0948; 1210 1610; 2010; 2318
CARNARVONRADIO	VIC	476 6407.5 (Day) 476 4323 (Night)	0005; 0200; 0348; 0605; 0805 1130
DARWINRADIO	VID	445 8487 (Day) 445 4272.5 (Night)	0048; 0448; 0848; 1048; 1248 1648; 2048
ESPERANCERADIO	VIE	435 Only	0610; 0648; 0210; 0610; 1010; 1118
THURSDAY ISLANDRADIO	VII	488.5 6333.5 (Day) 488.5 4228.5 (Night)	0018; 0418; 0618; 0918; 1218 1618; 2018
MELBOURNERADIO	VIM	430 6333.5 (Day) 430 4228.5 (Night)	0300; 0700; 0900; 0948; 1100 1500; 1900; 2300; 2318
BROOMERADIO	VIO	440 6407.5 (Day) 440 4323.6 (Night)	0010; 0118; 0410; 0810; 1230 1610; 2010
PERTHRADIO	VIP	484/HF	0100; 1200 and at each even hour plus 20 minutes
ROCKHAMPTONRADIO	VIR	4255.6 (HF only)	0048; 0218; 0418; 0618; 2218
SYDNEYRADIO	VIS	476/HF	0918; 2248 and at each even hour plus 50 minutes on MF and "primary" HF frequencies and at each odd hour plus 50 minutes on "secondary" HF frequencies between 2350 and 0950 inclusive

TOWNSVILLERADIO	VIT	420.5 6463.5 (Day) 420.5 4255.6 (Night)	0230; 0630; 0930; 1030; 1430 1830; 2230; 2348
DISTRESS, SAFETY & WEATHER SERVICES			
STATION	CALL SIGN	FREQUENCY	HOURS UTC
ADELAIDERADIO	VIA	472 4272.5 + 6463.5	0018, 1018
BRISBANERADIO	VIB	435 4230.5 + 6351.5	2318, 0948
BROOMERADIO	VIO	440 4323.6 + 6407.5	0118, 1230
CARNARVONRADIO	VIC	476 4323 + 6407.5	0200, 1130
DARWINRADIO	VID	445 4272.5 + 8487	0048, 1048
ESPERANCERADIO	VIE	435 4323.6 + 6407.5	0048, 1118
MELBOURNERADIO	VIM	430 4228.5 + 6333.5	2318, 0948
PERTHRADIO	VIP	484* 4229 8597 12994	0100, 1200*
ROCKHAMPTONRADIO	VIR	4255.6 + 6333.5	0048
SYDNEYRADIO	VIS	440 8452	2248, 0918
LONGRANGE (OCEAN & HIGHSEAS) BROADCASTS SYDNEYRADIO	VIS	4286 6428.5 8478	0100, 0500, 0900 1300, 1700, 2100 Long Range Navy Warnings Only
	VIX*	12907.5 16918.8 22485 4286 8428.5 8478 12907.5 16918.8 22485	0130, 0530, 0930 1330, 1730, 2130 Ocean & Highseas Weather Forecasts
* Transmitted by RAN Canberra			
THURSDAY ISLANDRADIO	VII	488.5 4228.5 + 6333.5	0018, 0918 (NX — Gale/Storm Warnings only)
TOWNSVILLERADIO	VIT	420.5 4255.6 + 6463.5	0930, 2348

+ Indicates "Night time" transmit frequency



QSP

1926 TRANS PACIFIC TESTS

Between 23rd May and 5th June 1926, the WIA asked Australian amateurs to take part in tests with America to determine:

— to discover the most reliable and effective amateur station in each of the Australian and American States

— to establish definitely the hours during which reliable amateur communication can be maintained across the Pacific

— to stimulate interest in observations on waves as low as five metres

— to discover the Australian amateur station that can correspond with an American amateur station on three separate nights of the test period with the minimum total input power.

The tests were being organised by the then Honorary Federal Secretary, Ross A. Hull. The WIA's Federal Executive Council in 1925/26 had its Headquarters in the Royal Society's Building, 5 Elizabeth Street, Sydney. Telephone B 2235. Postal address was Box 3120/P, GPO Sydney. President was Phil Renshaw, and Honorary Treasurer H A Stowe.

The WIA letter-head of the day included the

following: *The Institute is established for the purpose of encouraging the scientific study of wireless telegraphy and telephony in Australia, and to promote the intercourse of those interested in the subject and to aid them with advice and instruction.*

There will be further articles on the 1926 Tests in a later edition. Are there any amateurs or SWLs who took part in those tests or have information they could pass on? If so, please advise the Federal Office.

Contributed by Tim Mills VK2ZTM, based on information supplied from the files of the Waverley Amateur Radio Club, VK2BV by Duane VK2VE. (See page 64, November 1985 Amateur Radio).



Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW 2868

ALARA Get-Together 1985, at Glen Osmond Woodend Vic. Standing from left: Janet VK3BTU, Bron VK3DYF, Warren VK3BYD, Muriel May and daughter Charlene. Front: Bonnie VK3PBL, Marjorie VK3HQ, Valda VK3DVT, Joan VK3NLO, Margaret VK3DML, and Mavis V13KS.

Hello again! How quickly the months go by, and ALARA is nearly 11 years old.

As part of our celebrations this year, we are pleased to announce a special ALARA Birthday YL Activity Day on Saturday, 26th July from 0400-1200 UTC. Phone only, all bands. (Frequencies as for the ALARA Contest). YLs to contact YLs.

Sorry fellas! YLs only this time, but the ALARA Contest is coming shortly, and we will be very pleased to hear from you then.

WIA 75th ANNIVERSARY MEDALLIONS

The following ALARA members have been awarded WIA 75th Anniversary Medallions. Marilyn Syme VK3DMS — Zone and Club Net Controller, VK3 Division.

Austine Henry VK3YL — Assistance to WIA, particularly VK3 Division.

Margaret Schwerin VK4AOE — VK4 ALARA Representative. Assistance to Dalby Amateur Radio Club and the only YL member.

Jenny Warrington VK5ANW — VK5 Division Secretary, Vice-President and Columnist.

Marlene Austin VK5QO — Written history of VK5 Division 1919-1980.

Joy Charles VK5YJ — WICEN Roster Co-ordinator. Yachting Trails Co-ordinator.

Christine Bastin VK6ZL — Divisional Councillor. Gil Weaver VK6YL — Divisional Councillor.

Daphne Hugo — On behalf of the Ladies Luncheon Group.

Congratulations ladies, on a very fine achievement.

ALARA AWARD

Recipients of the ALARA Award from January to March 1986 are as follows.

No/Date 1986 Name Call Sign/Stickers

115/22.1 Mervyn Vinicombe VK1MV
116/21.2 Maree Smirow VK2NKN
117/21.2 Jeanne Gilchrist ZL2BOD/4
118/19.3 Mary McDonald WB5LBR

NEWSLETTER

Our long-time Editor of the ALARA Newsletter, Marlene VK5QO, is retiring from the position after five years. During that time the Newsletter has grown, both in content and standard of material, a tribute to Marlene's journalistic capabilities. We owe her a very big vote of thanks for all the time and effort she has put into making it such an enjoyable and readable publication. (Cases exist of ALARA members not being able to read their Newsletter when it arrived because the OM had got to it first, and they had to wait until he had finished reading it!).

The new Editor, from July, will be Bron VK3DYF and any items for the Newsletter should be sent to her: Bron Brown, 99 Foam Street, Rosebud, Vic. 3939. Our best wishes to you Bron. I am sure you will do an excellent job.

ZL2 YL GET-TOGETHER

What a fabulous day! The sun shone, the birds sang and the wind did not blow. We gathered together in friendship at Sylvia's place (ZL2LS), Napier on 22nd February 1986.

We sat under the magnificent trees in Sylvia's garden, out of the hot sun, and chattered and reminisced, caught up with old friends, made new ones, put faces to the voices we often work on the air, and really enjoyed ourselves.

We had each brought a plate of food which we shared, a Pot Luck Lunch. This we had outside in the shade so we ate and enjoyed the view of the gardens.



Back from Left: Pearl ZL2QY, Biny ZL2AZY, Jos ZL2BAO, Aola ZL1ALE.
Front: Marilyn ZL2BOA, Jeanne ZL2BOD and Cathy ZL2AOK.

After lunch we had a photographic session of the ALARA members and groups of the girls who belonged to overseas YL amateur radio organisations. The OMs were included in the day and had their photographs taken, too.

Shortly after 3pm, various ones who had to get away reluctantly said their good-byes and expressed their hopes for meeting again in the near future. It really was a truly fabulous day.

Thanks to Marilyn ZL2BOA for this information.

ODDS-N-ENDS

Congratulations to the ALARA members who assisted with the amateur radio segment of the Airwaves program, broadcast on ABC, earlier in the year, notably Helene VK7HD and Marilyn VK3DMS. Congratulations to Marilyn also on being the first VK member of the Belgian Young Ladies' Club.

Denise VK5YL, would like to sponsor someone, anywhere, who would be interested in contacts on CW. There must be some CW enthusiast among the YLs out there somewhere who would like to be sponsored into ALARA.

I have been informed by an ALARA member, that the meaning of 33 given in this column in March, was not correct. She gives the original meaning as Love sealed with friendship between one YL and another. The version printed, apparently, came later. My apologies for getting it wrong!

CORRECTIONS TO YL ACTIVITIES LIST (APRIL AR)

The VE/VK/ZL YL Net on 14.160 MHz, Fridays at 0500 UTC is a phone not a CW net.

The Monday YL-DX Net on 14.220 MHz now starts at 0600 UTC, not 0630.

THE 220 YL NET

This net is still most completely by Barry VK7GE. (Think I'll resort to a little versifying!).

Every Monday at 0600

We wait on frequency;

Listening for the familiar tones
Of VK7GE.

Our Barry calls us each in turn,

And keeps us all in order,

And handles most effectively
The odd OM disorder.

YLs all around the world

Are waiting patiently,

He's got more ladies in his book
Than the Sheikh of Arab-eel!

He has a cheerful chat with each.

We never hear him flustered;

He does not raise his voice or shout
Where others may have blustered.

He smooths the way for rare DX

And gives us all a try;

Hears the faintest YL voices,
Never lets one pass him by.

There are girls from England, Belgium, France,
Sweden and Italy,

New Zealand, USA, Brazil,
Zimbabwe and Fiji.

From many places round the globe
We hear the cheerful greetings,
And catch up with our friends again
In pleasant on-air meetings.

So thank you, Barry, from us all
For such a friendly net.
Hope to meet you on a Monday night
For many a long year yet.

Until next month, 33/73, Joy VK2EBX.



Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

We are still trying to establish the origins of the alleged taxi-cab operation being heard on the lower end of 28 MHz, and purporting to be coming from Hong Kong, Taiwan.

EXPANSION OF BANDS

An interesting note from *Practical Wireless*, January 1986. Proposals made by the ARRL seeking expansion of the current 28 MHz band section used by the US Novice Licence Holders could, if adopted, create world-wide problems. The international beacon system mainly operates within the agreed sub-band 28.200-28.300 MHz; the ARRL proposal is to allow multi-mode novice operation down to 28.100 MHz (the current US lower phone limit is 28.300). The use of CW, SSB and RTTY within this sub-band will obviously affect the beacon system and it should be remembered that if the novice allocation goes through, US general and higher licence classes will automatically be allowed use of the same frequencies, with up to full legal power. It is further understood that ARRL, in recognition of this fact, would initiate proposals to reorganise and move the beacon network.

It is pleasing to report that I have received my 109 QSL cards back with DXCC from the ARRL, and have to worry about the cards no longer!

See you next month, and will be looking for your intruder report!

Acknowledgments: VK4AKX and Practical Wireless.

Radio Amateur Old Timers Club



John Tutton VK3ZC

11 Cooloongatta Road, Camberwell, Vic.

Following are the results of the March GSO Party held on 20 metres.

Call	Mode	QSOs	Ar- ss	Total
VK4RF	CW/SSB	38	10	1900
VK6HC	SSB	31	9	1395
VK3JA	CW/SSB	26	9	1170
VK3SJ	SSB	29	7	1015
VK3KS	CW/SSB	23	8	920
VK3LC	CW/SSB	22	8	880
VK2PU	CW/SSB	24	7	840
VK7RF	SSB	21	8	840
VK3AWA	SSB	18	8	720
VK4OX	SSB	23	6	690
VK3CH	CW	16	7	560
VK3XF	CW/SSB	16	6	480
VK4AEM	SSB	14	6	420
VK3SB	CW/SSB	13	6	390
VK5RK	SSB	15	5	375
VK4BG	SSB	12	6	360
VK5KV	SSB	12	5	300
VK7BJ	SSB	12	5	300
VK3YW	CW	5	4	100
VK3NA	SSB	3	1	15
ZL2KM	CW/SSB	25	9	1125
ZL2RP	SSB	24	7	840
ZL3BJ	CW/SSB	21	8	840
ZL2AB	CW/SSB	19	7	665
ZL2AT	SSB	15	7	525
ZL4ID	SSB	21	5	525
ZL2RI	SSB	13	6	390

As seems to be the usual thing for March, old man Skip had quite an effect on contacts in the 20 metre QSO Party.

Comments indicate, however, that those taking part, or at least those who forwarded logs, had an enjoyable three hours. There were 22 logs submitted from the 43 VKs who were active, while ZL numbers were seven logs from a reduced total of 10 active.

Overseas members, John Stewart W6GTI, and Les Clarke ZS5NU, worked by VK6HC would have been eagerly sought if they had been on longer.

Cross-checking of logs shows that some of our Old Timers must still be using phonetics of the ACK, TOC and EMMA days. Smarten up fellers, there were quite a number of call sign errors. But maybe it is due to all those old carbon microphones still in use out there!

In your returns would you please indicate the mode you were using.

Thank you for your comments on the contact exchange suggestions. There will be no charge certainly for the August Parties (remember there are two, 40 and 80 metres), but these columns will keep you posted.

73 John VK3ZC.

Reports were received with thanks for the month of February, from the following: VK2s BQS; DEJ; PS; QL; SWL A Bradford; VK3s XB; XU; VK4s AXK; BG; BHJ; BTW; DA; KAL; KHZ; MR; NGF; VK5s BJF; GZ; TL; VK6s JO; XV; XZ; VK7RH; VK8s HA and JF.

There were 835 broadcast (A3E) intruders reported — 271 CW (A1A), 282 RTTY (F1B), 156 other modes (Woodpecker, R7B Multiplex, etc) and 73 intruders gave identifying call signs.

Of particular interest to Norman VK4BHJ and Jim VK2BQS, will be the news that the following intruders are all part of the Vietnamese News Agency — VCN; KFB; CFK; VZC; NBZ; PKJ and VMO. Last, but certainly not least is VRQ.

NEW ADDRESS

Bruce VK6XZ, the Western Australian IW Co-ordinator advises of a change of mailing address. Any future reports can be sent to Bruce Hunt VK6XZ, 59 Pembury Road, Thornlie, WA, 6108.

Also, we have a new Intruder Watch Co-ordinator for the VK1 area, namely Alan Hawes VK1WX, PO Box 547, Dickson, ACT, 2602. Welcome to the ranks Alan, and belated congratulations on the move from VK1KA to VK1WX. ACT amateurs or SWLs can send any reports to Alan.

BEACONS AND TAXI-CABS

The 'V' Beacon, on or about 7003 MHz, is also being heard in the Federal Republic of Germany. This was reported as being in Vladivostok by the IARU Region 2 Monitoring System Co-ordinator, W7JIE.

CITIZEN OF YEAR AWARD

Sam Voron VK2BVS was recently one of five people awarded Citizen of the Year by the Willoughby Council.

Sam was honored with this award for the tireless efforts and compassion shown by him during the Mexican Earthquake Disaster.

When not out and about demonstrating amateur radio to the public at every possible opportunity, Sam operates from his shack below his parents house in Roseville, New South Wales.

Sam's interest in radio was aroused when, as a lad of 11, he happened to hear the Voice of America via shortwave on his small transistor radio. Sam wrote off to VOA advising them that he had heard their signals and was thrilled to receive VOA QSL cards.

With this success, Sam then wrote to ships, planes, and the US navy, army and air force. He has heard Francis Chichester on his solo voyage

around the world, the first Chinese space satellite (playing the national anthem) in 1968, Radio Hanoi broadcasting to US servicemen and an aeroplane flying to Khartoum from Cairo radiating a message that it was turning back as one propeller had stopped. By this time Sam was hooked on radio, and was given a walkie-talkie when he was 13, so that he could talk as well as receive.

By the time he was 17, Sam had sat for the amateur examinations and received his radio licence.

Last November, Sam relayed a message of congratulations from President Reagan to the WIA on the occasion of its 75th Anniversary. Sam believes that President Reagan has a national communication plan that, in the event of a nuclear attack, should allow all other communications be wiped out, the first links to bring the country together will be amateur radio operators across the nation.

Abridged from North Shore Advocate, 9th April 1986.

Sam proudly displays the Citizen of the Year Award, presented to him for service during the Mexican Earthquake.



Photograph courtesy Alan Todd.



**AMSAT
Australia**

AMSAT Australia

Colin Hurst VK5HI
8 Arndell Road, Salisbury Park, SA. 5109

**OSCAR-10 APOGEEES
JUNE 1986**

DAY	ORBIT	APOGEE U.T.C HHMM:SS	SATELLITE COORDINATES LAT DEG LON DEG	SYDNEY				ADELAIDE				PERTH			
				AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG
1st	June														
152	2231	0123:48	-24 255	272	42	282	54	388	75						
2nd	June														
153	2233	0842:52	-24 246	278	51	291	62	351	88						
3rd	June														
154	2235	0801:55	-24 236	286	68	387	78	42	77						
154	2237	2320:59	-24 227	299	68	336	76	66	69						
4th	June														
155	2239	2248:02	-24 217	322	75	19	76	77	61						
5th	June														
156	2241	2159:06	-23 208	4	78	50	71	84	52						
6th	June														
157	2243	2118:10	-23 199	43	74	67	63	98	43						
7th	June														
158	2245	2037:14	-23 189	64	66	77	55	94	34						
8th	June														
159	2247	1956:18	-23 180	75	58	84	46	99	25						
9th	June														
160	2249	1915:22	-23 178	83	49	98	37	183	17						
10th	June														
161	2251	1834:25	-23 161	89	48	95	29	187	9						
11th	June														
162	2252	0613:57	-23 336					249	2						
162	2253	1753:28	-23 151	94	32	99	21	111	1						
12th	June														
163	2254	0533:01	-23 327					253	9						
163	2255	1712:32	-23 142	98	23	184	13								
13th	June														
164	2256	0452:05	-23 317					-8	258	17					
164	2257	1631:36	-23 133	183	15	189	5								
14th	June														
165	2258	0411:08	-23 308					252	7	262	26				
165	2259	1558:48	-23 123	187	7	113	-2								
15th	June														
166	2260	0330:11	-23 299	251	4	257	14	266	34						
166	2261	1509:44	-22 114	112	-8										
16th	June														
167	2262	0249:15	-23 289	255	12	262	22	271	43						
17th	June														
168	2264	0209:19	-23 288	268	19	267	31	277	52						
18th	June														
169	2266	0127:23	-23 278	265	28	272	39	285	61						
19th	June														
170	2268	0046:27	-23 261	278	36	279	48	298	69						
20th	June														
171	2270	0005:31	-23 252	275	45	287	56	323	77						
171	2272	2324:33	-23 242	282	53	298	64	11	79						
21st	June														
172	2274	2243:37	-22 233	292	62	318	71	58	74						
22nd	June														
173	2276	2202:41	-22 223	308	78	352	75	68	66						
23rd	June														
174	2278	2121:45	-22 214	337	75	38	74	78	57						
24th	June														
175	2280	2048:49	-22 205	19	76	54	67	85	48						
25th	June														
176	2282	1959:53	-22 195	49	78	68	59	98	39						
26th	June														
177	2284	1918:57	-22 186	66	63	78	51	95	38						
27th	June														
178	2286	1837:59	-22 176	76	54	84	42	99	22						
28th	June														
179	2288	1757:03	-22 167	83	45	98	34	183	13						
29th	June														
180	2290	1716:07	-22 158	89	37	95	25	187	5						
30th	June														
181	2291	0455:48	-22 333					252	4						
181	2292	1635:11	-22 148	94	28	188	17	112	-2						

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA

Control: VK5AGR

Amateur Check-In: 0945 UTC Sunday

Bulletin Commences: 1000 UTC

Winter: 3.685MHz — Summer: 7.064MHz

AMSAT PACIFIC

Control: JA1ANG

1100 UTC Sunday

14.305MHz

AMSAT SW PACIFIC

2200 UTC Saturday

21.280/28.878MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGMENTS

Material has been received from Bob VK3ZBB, Graham VK5AGR and AMSATELEMAIL.

JAS-1

From AMSAT-TELEMAIL is the latest information on the Japanese (JAMSAT) Amateur Space-craft.

Introduction

JAS-1 is an amateur radio satellite, promoted by JARL as a joint venture with NASDA. NEC constructed system units (Space frame, power supply, etc), while JAMSAT, with its selected volunteer JAS-1 project team, designed and built the mission units (transponders, telemetry command and house-keeping micro-computer) and ground support systems.

JAS-1 has been completed and has passed all the necessary tests. It is in a clean room waiting for the launch, currently scheduled for August 1986.

The outline of the unique satellite is explained in the following.

Many thanks to Harold Price NK6K, for his assistance in the preparation of this article.

**N6MBM/JA2PKJ,
Tak Okamoto,
191 Pinestone,
Irvine, CA 92714**

JAS-1 Mission Objectives

1 JAS-1 will provide reliable world-wide amateur radio communications.

2 JAS-1 will enable radio amateurs to study tracking and command techniques.

3 JAS-1 will offer an in-space proving ground for radio amateur developed and built transponders and sub-systems.

4 JAS-1 will provide NASDA an opportunity to carry out a multi-payload launch using their new H-1 launcher. (NASDA has never engaged in a multi-payload launch, thus the JAS-1 project will offer NASDA an excellent opportunity by providing them with an active payload having its own telemetry-beacon and transponder for ranging).

Form and General Dimensions

The space-craft takes the form of a 26-facet polyhedron, which measures 400 x 400 x 470 mm and weighs 50 kg.

Launch and Orbit

JAS-1 will be launched into a circular low-earth orbit, which will be non-sun synchronous and non-polar.

Launch Vehicle	H-1 two stage rocket
Launch Number	Test Flight #1
Launch Site	Tanegashima Island, Japan

Launch Date	August 1986
Estimated Inclination	50 degrees
Estimated Altitude	1500 km
Estimated Period	120 minutes
Estimated window per	20 minutes/pass

OSCAR-10 APOGEES JULY 1986

DAY #	ORBIT #	APOGEE U.T.C HHMM:SS	SATELLITE COORDINATES LAT DEG	LON DEG	BEAN HEADINGS-----I							
					SYDNEY		ADELAIDE		PERTH			
					AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG		
1st	July											
182	2293	0414:42	-22	323					9	256	11	
182	2294	1554:15	-22	139								
2nd	July											
183	2295	0333:46	-22	314					1	268	28	
183	2296	1513:19	-22	129	183	12	258	1				
3rd	July											
184	2297	0252:58	-22	305	249	-1	255	9	265	28		
184	2298	1432:23	-22	128	188	4						
4th	July											
185	2299	0211:54	-22	295	254	6	268	17	278	37		
5th	July											
186	2301	0138:58	-22	286	258	14	265	25	275	45		
6th	July											
187	2303	0058:02	-21	277	263	22	278	33	282	54		
7th	July											
188	2305	0009:06	-21	267	268	38	276	41	292	63		
188	2307	2328:08	-21	258	273	38	283	58	308	71		
8th	July											
189	2309	2247:12	-21	248	288	47	293	58	348	77		
9th	July											
190	2311	2286:16	-21	239	288	56	387	66	25	76		
10th	July											
191	2313	2125:28	-21	229	308	64	338	72	54	78		
11th	July											
192	2315	2044:24	-21	228	319	71	5	74	69	62		
12th	July											
193	2317	2003:28	-21	211	352	75	37	78	78	53		
13th	July											
194	2319	1922:32	-21	201	29	73	57	64	85	44		
14th	July											
195	2321	1841:36	-21	192	53	67	78	56	98	35		

Estimated passes per day Eight passes/day

Designed Life

Estimated lifetime is three years.

Special Features of JAS-1

JAS-1 carries two separate mode J transponders. One is a linear transponder, and the other is a digital store-and-forward transponder mainly for non-real-time communication between stations located in different time zones.

The reasons for selecting mode J for this first Japanese amateur radio communications satellite are:

It is becoming increasingly difficult to use 145 MHz for a satellite downlink because of man-made electrical noise and other interference.

The planners of JAS-1 wanted to provide a successor to AMSAT OSCAR-8's mode J, which was originally developed by JAMSAT's engineering team back in 1976.

435 MHz is much quieter than 145 MHz as a downlink band, it is comparatively free from man-made noise and sky-spectrum effects. The digital transponder will provide error-free information exchange.

Transponders

The linear transponder = mode JA:

The passband will be 100 kHz wide. The transponder will have an output of one watt PEP. Ground stations will need an uplink power of 100 watts EIRP. The sidebands will be reversed, i.e. the uplink is LSB; the downlink is USB. There will be a 100 mW CW beacon switchable to PSK when needed.

Uplink pass band: 145.900 MHz — 146.000 MHz
Downlink pass band: 435.800 MHz — 435.900 MHz

Beacon frequency: 435.795 MHz

Translate frequency: 581.800 MHz

The digital transponder = mode JD:

There will be four 145 MHz band input channels using Manchester coded FM for the uplink. Ground stations will need 100 watts EIRP. There will be one downlink channel in the 435 MHz band using PSK, the output will be one watt

RMS Channels are:

Uplink channel 1: 145.850 MHz

Uplink channel 2: 145.870 MHz

Uplink channel 3: 145.890 MHz

Uplink channel 4: 145.910 MHz

Downlink channel: 435.910 MHz

The data format is HDLC. The protocol is AX.25 Level 2 Version 2. The data transfer rate is 1200 BPS for both uplink and downlink.

The reasons for not using Bell-202 type FSK modulation are:

To reduce the parts count onboard JAS-1. Using Manchester coded FM for uplink reduces JAS-1's onboard decoder chip count by 16.

To improve the downlink margins. Due to JAS-1's tight power budget, only one watt is generated by the downlink transmitter. A more efficient modulation scheme like PSK is required.

JAS-1 will be a store and forward system but not a real time digipeater. Digipeating is not an effective use of a low orbit satellite such as JAS-1, which has a limited communication footprint and visibility time.

JAS-1 has four uplink channels for one downlink channel. This is because the difference of channel efficiency between uplink and downlink. An uplink channel is shared by several ground users. Since the ground users cannot hear each other, and are listening to the downlink channel anyway, the uplinks are subject to packet collisions. This scheme is called Pure ALOHA, and is known to have a theoretical maximum channel throughput of 18.4 percent. The JAS-1 downlink is 100 percent efficient, since only JAS-1 transmits there. To balance capacity, as well as add redundancy, four uplink channels are used. The combined uplink efficiency is then 4 * 18.4 percent or 73.6 percent. The remaining downlink time is used for general messages and telemetry data.

JAS-1 will accept a connect from only one station at a time with the software scheduled for initial use. Multiple connections will be supported in subsequent software updates. General packet operation is scheduled to begin in November 1986.

Digital Hardware

The micro-processor is a MIL-STD-883B screened

NSC-800 running with a 1.6 MHz clock. This is the only processor on board. It controls the digital transponder and also acts as an integrated housekeeping unit (IHU). The on-board memory has a 1.5 MB physical storage capacity. 48 chips of NMOS 256K DRAMs are used. A hardware based error-detection/correction circuit is incorporated to protect the entire 1.5 MB and provide a one MB error-free memory area. The system program occupies some 32 kB, the rest is used for message storage.

The memory unit is physically divided into four identical 256 kB memory cards, any one of which can be assigned as the system area. Up to three cards can be turned off. This design provides system redundancy and allows command stations to control power consumption without total loss of service.

JAS-1 has five hardware HDLC controllers. Four of them are for the uplink channels and one is for the downlink channel. In total, these controllers consist of some 140 CMOS MSIs, yet their power consumption is less than that of a single NMOS LSI HDLC controller like WD-1933. JAS-1 does not have any ROM but has simple hardware boot-strap-circuit instead. This design is to increase system flexibility and reliability.

Power System

25 of JAS-1's 26 faces are covered with a total of 979 pieces of solar cells. They will generate 8.5 watts of power at the beginning of life.

JAS-1 employs 11 Ni-cad battery cells with a capacity of six amp-hours. These supply 14 volts average to JAS-1's main power bus. The 14 volts is converted and regulated to +10, +5 and -5 volts.

Antenna System

JAS-1 has three antennas. Two-metre reception antenna; slant quarter-wave mono-pole isotropic 70 cm transmission antenna with -4 dBi gain; Mode-JA: Slant Turnstile LHCP +Z axis +3 dBi gain and Mode-JD: Slant Turnstile RHCP -Z axis +3 dBi gain.

Attitude Control

Forced shaking using the earth's geomagnetic field. JAS-1 has two 1 A/m sq permanent magnets in its Z axis.

Telemetry

Analogue system telemetry has 12 analogue channels and 33 system status flags. This telemetry can be sent without the help of the NSC800 micro-processor and will be turned on automatically by the separation from the H-1 launcher.

The telemetry is sent on the 100 mW beacon on 435.795 MHz in CW, switchable to PSK.

Digital system telemetry has 29 analogue channels and 33 system status flags. This software driven telemetry can be sent in any format, and can include short text messages. This telemetry can be sent on either the mode JD downlink channel (435.910 MHz) or the mode JA CW beacon (435.795 MHz).

Command

A simple three channel tele-command system is used for global control; functions are JA transponder ON/OFF, JD transponder ON/OFF; and independent ON/OFF of the A-0 beacon. An additional 37 channels are available mainly for controlling the digital transponder.

On-board command from the NSC-800 is also available.

Ground Stations

Mode-JA

A ground station set-up which was used for AMSAT OSCAR-8 mode-J can be used for JAS-1 mode-JA. A station with a 10 watt two-metre SSB transmitter and a 10 dBi beam for uplink; and a 7 m cm receiver (with low NF) with a 15 dBi beam for downlink; should be adequate for this job.

Mode-JD

In addition to the mode-JA set-up, FM mode is required for the two-metre transmitter.

Since JAS-1 uses the standard AX.25 protocol and 1200 BPS data rate, ground stations will be able to use a TAPR-style TNC, two metre FM transmitter and a 70cm receiver without modification.

The JAS-1 modem, a special interface board,

will be made available containing the Manchester modulator and an audio PSK demodulator allowing connection to the *modern disconnect* connector of a TAPR-style TNC. The modem also connects to the audio input and PTT of the two-metre FM transmitter and to the audio output and frequency control (option) of a 70 cm SSB receiver. Although JAS-1 will be available to individual access, the general amateur community will benefit from JAS-1 gateways. Messages relayed through gateways can be sent world-wide and is as easy as sending messages to distant stations via a WORLWIF gateway.

Outline of Project History/Schedule

November 1982 Freezing of conceptual/preliminary design
December 1982 Preliminary design
April 1983 Detail design
— June 1984 Engineering modules integration and test ground support system integration
July — Flight model #1 integration and EIC/MIC
December 1984 Flight model #1 general test
January — Flight model #2 integration and EIC/MIC
August — Flight model #2 general test
November 1985 Software development

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia, is now producing a monthly newsletter containing updated satellite news, orbital predictions, Keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populous informed on the latest information available and to realise funds for the funding of projects or the purchase of an item of hardware for a future amateur satellite project, eg Phase 3C, Phase 4 or whatever. The cost of the newsletter is \$15 and cheques made payable to WIA (SA Division), should be forwarded to Graham VK5AGR, QTHR.

To date the Newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would like something similar in their own countries.

The newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed in this column, and to date it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR-10 and OSCARs 9 and 11.

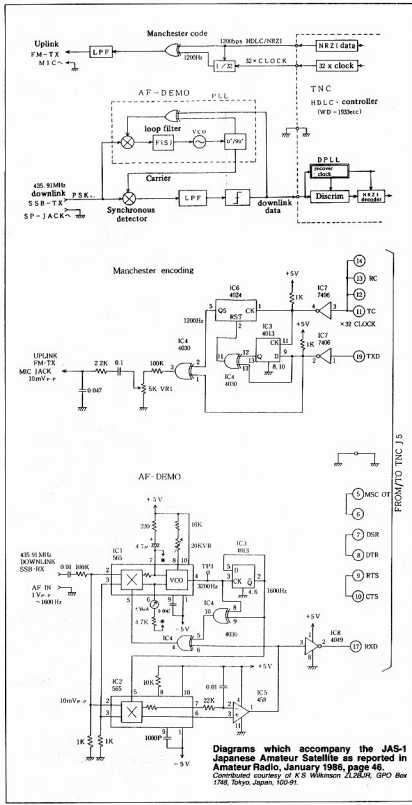
If you are at all interested in satellite communication, this Newsletter is a must.

AMSAT-AUSTRALIA DONATION TO PHASE-3 PROGRAM

Following the success story for 1985 that the AMSAT-Australia Newsletter has been, Graham VK5AGR, recently forwarded a cheque to AMSAT-DL for an amount of \$5000, as a donation towards the Phase-3 Program. The \$5000 was made up by \$3000 from AMSAT-Australia Newsletter Subscriptions, plus donations from the Software Service and proceeds from the PC-1248 Pocket Computer Sales, supplemented by a \$2000 donation by the WIA (SA Division), being a significant part of the profits of the 400 VKS two-metre pre-amplifiers that were marketed by the Equipment Supplies Committee of the SA Division. A large percentage of these pre-amplifiers were purchased by listeners to, and operators of OSCAR-10. This sizable donation is a credit to the untiring efforts of Graham VK5AGR, to whom we are all heavily indebted.

PHASE-3C LAUNCH INFORMATION

The current launch date for Phase-3C is 21st September 1986. To keep all relatively informed on the latest developments of assembly and integration, AMSAT-USA are loading weekly bulletins to AMSAT-TELEMAIL. The bulletins would be significantly out-of-date if used in this column, due to publishing lead-times, however the information is disseminated each week during the AMSAT-Australia Sunday Evening Net. To give an idea of what information is being uploaded to the



Diagrams which accompany the JAS-1 Japanese Amateur Satellite as reported in *Amateur Radio*, January 1986, page 46. Contributed courtesy of K S Wilkinson ZL2BJR, GPO Box 1748, Tokyo, Japan, 100-91.

bulletin board, Status Report Number 3, dated 3rd March follows.

The AMSAT-DL team of Werner Haas DJ5KQ and Hanspeter Kuhlén DK1YQ, spent the weekend at the AMSAT laboratory in Golden, Colorado.

Purpose of their trip was to exchange information, particularly for the RUDAK experiment, as well as other matters.

DK1YQ also met with a TAPR representative on Sunday. 16 mm and photo documentation of the construction activities and the team will return to Germany on 3rd March.

The RF Power Amplifier module will be slightly larger than projected. As a result the mounting points on the springers are no longer valid, and new ones are being made to accommodate the changed dimensions.

The Arm Safe Plug has been pre-wired and is installed.

The Expert Licence Application forms were not received by W3GEY prior to the weekend. The originals are complete and the entire file with all needed copies will be in his hands in a couple of days.

The Main Battery Pack was wired and the battery case was assembled and closed. The main battery is now mounted in the spacecraft, but will likely be removed one more time to allow installation of the last mounting screw for the fuel tank.

No progress was made on mounting the Helium Bottle Bracket. That awaits the manufacture of

additional mounting parts. An alternative mounting plan has been decided upon.

A milestone of sorts has been achieved. The Main Fuel Tank has been mounted and all mounting screws except one have been installed. That will require temporary removal of the main battery as noted above. The fit of the Main Tank was unusually good and the installation was relatively routine. The reaction from W3GEY was "Something must be wrong... that was too easy." Those familiar with the build of the two prior Phase II satellites will remember that the nylon spacers which mount between the tank and the centre core of the spacecraft had to be of various different thicknesses. In the present instance all the nylon spacers are identical.

The Thermal-Vac schedule remains unchanged. Presently a feed-through connector for the Vacuum chamber is being sought and hopefully will be promptly located. There is at least a chance that the Vibration Test may also be done at the Martin-Marietta facility. That question is presently undecided.

Again, as in the past, the contents of this report should be made available to Packet and Bulletin Board Systems.

de WB0RV... thanks to TELEMAIL
SATELLITE ACTIVITY FOR PERIOD 1ST
TO 28TH FEBRUARY 1986

LAUNCHES

The following launching announcements have been received:

1986-010A	PRC-18	Feb 01	China
1986-011A	Cosmos 1729	Feb 01	USSR
1986-012A	Cosmos 1730	Feb 04	USSR
1986-013A	Cosmos 1731	Feb 07	USSR
1986-014A	USA-15	Feb 09	USA
1986-014E	USA-16	Feb 09	USA
1986-014F	USA-17	Feb 10	USA
1986-014H	USA-18	Feb 09	USA
1986-015A	Cosmos 1732	Feb 11	USSR
1986-016A	BS-2B	Feb 12	USSR
1986-017A	MIR	Feb 19	USSR
1986-018A	Cosmos 1733	Feb 19	USSR
1986-019A	Spent	Feb 22	France
1986-019B	Viking	Feb 22	Sweden
1986-020A	Cosmos 1734	Feb 27	USSR
1986-021A	Cosmos 1735	Feb 27	USSR

RETURNS

During the period, 52 objects decayed, including the following satellites:

1985-110A	Cosmos 1706	Feb 09
1985-121A	Cosmos 1714	Feb 27
1986-009A	Cosmos 1728	Feb 11
1986-012A	Cosmos 1730	Feb 13

GENERAL

The Japanese Broadcasting Satellite 2B (BS-2B) was launched from the Tanegashima Space Centre and had tentative orbit elements of Apogee 36322 km, perigee 196 km, inclination 28.5 degrees and period 641 minutes. Transmitting frequency and power were 2.28072 GHz and 1.3 watts.

As at 18th February 1986, 1943 UTC, ATS 1 was located at 56.310 degrees west with inclination 11.963 degrees.

at

Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER

56 Baden Powell Drive, Frankston, Vic. 3199

Magazine Review

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3038

(G) General : (C) Constructional : (P) Practical without detailed constructional information : (T) Theoretical : (N) Of particular interest to the Novice : (X) Computer Program

RADIO COMMUNICATION March 1986 — Gamma Matching Towers and Masts (P)

HAM RADIO January 1986 — Frequency and Level Standard (C, N). Calibrated S Meter. Coaxial Stub Filters (G, N)

RADIO (Indian Radio Societies) May 1985 — General information on amateur radio in India. Regulations, Conferences, etc. (G)

(G) Magazine December 1985 — Cellular Radio (G). 1985 Index.

VHF COMMUNICATIONS 3/1985 — New English Translator Available Colin Brock. Magazine now resumed. 70 cm Helical Antenna (P). Crystal Controlled Source for 10 MHz (C). PCB — Integrated Coaxial Tuned Circuit (P).

CQ-TV No 133 February 1986 — 24 cm FM-TV Transmitter (P). 70 cm Coaxial Collinear Antenna. (C)

WHAT'S NEW IN ELECTRONICS January 1986, February 1986 — Trade and General Information about Test Equipment, Components, Hardware, etc newly available. Includes Educational Material.

73 MAGAZINE February 1986 — Scanning for the TR 2400 (C). RIT for the FV 101.

QST March 1986 — Weather Maps on Dot Matrix Printer (P, X). Mountaintopping (G). CW Transmitter for 902 MHz (C).

WORLD RADIO March 1986 — Two Views on Cellular Radio. New Office Bearers for VLRU. FCC Highlights. General amateur radio News and Views.

at

THOUGHT FOR THE MONTH

Anticipating change is to benefit from it.



This article has arisen from discussion with, and comment from, several amateurs with many years experience, and from ideas raised in print and at meetings.

We have long been bombarded with the opinion that the main need of our hobby, or the WIA (or probably any club or association with which we are involved), is a strong infusion of young blood.

Comments from both sides:

— the management is too old, or out of date, set in their ways, unaware of new developments, unwilling to accept new ideas.

— a young recruit is more value than an old recruit.

— the young are vigorous, enthusiastic, prepared to work, and up with modern technology.

— the old have the hindsight of experience.

— we must maintain and increase the number of people who enjoy our hobby.

— if our members drop we lose our lobbying power and privileges.

— change is necessary for growth.

— the present system is okay, why change it?

— amateur radio is such a wonderful hobby that more people should be persuaded to join.

Inevitably, the discussion concludes that we should be recruiting from the youth, but without any clear plan as to means or direction.

The Wireless Institute, in its 75 years, has experienced generally steady growth apart from the short bursts of rapid growth due to the post-war availability of cheap disposals gear and the more obvious period of the CB boom.

It is unlikely that either of these events will be repeated, so, if repeat it, we wish to increase the numbers of amateurs, more more active recruitment techniques must be considered.

It has been suggested that the computer boom could provide recruits. Certainly this is a field where the interest of young people is very high, but the link between computers and radio is much more tenuous than that between CB and amateur radio. It is not likely to interest young people in the technical aspects of radio.

Statistics recently published claim that our major growth is from the middle-aged or retired section of the population. Perhaps we should

admit that this is where much of our future lies. This group has the time and resources to be able to make a reasonably long term commitment to the hobby and to the WIA.

They also are probably the group with most ability to sell the hobby to young people. Even today, much of our culture is passed from grandparents to grandchildren, direct.

A major part of the amateur tradition is the help extended to the newcomer by the experienced operator. (Note that this does not necessarily mean the old helping the young). It is a shame that so often the help and encouragement offered is acknowledged only in the column headed *Silent Keys*.

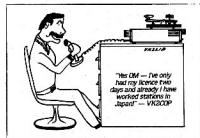
So, if you have enjoyed someone's assistance, tell them so, and be prepared to reciprocate by in turn assisting a new recruit.

If you believe we need to spread the message about radio, have a go at it yourself.

I do not personally believe that any one group is a better target than any other, but you may be able to apply your efforts more towards one particular group — the young, the old, the disabled, or even the female!

More importantly, if you come up with a good idea or technique, please be prepared to share it. Let me know about it, so I can pass it on. Many are only waiting for a few hints.

73, Brenda VK3KT.



Club Corner

VK3RVL — two-metre repeater

The Robinvale two-metre repeater, VK3RVL, is situated atop the Robinvale wheat silo, adjacent to the town centre. It was first placed on-air under test in November 1984, at the residence of VK3YEJ, where construction took place most Monday nights and whenever time permitted.

The construction crew consisted of Graeme VK3YEJ (who's small, but well-equipped shack was used as a work-shop), Roger VK3KYY (who donated his pride-and-joy power supply), Geoff (an amateur when he can find the time), and Mark VK3KYG.

VK3RVL was placed in its final position on the silo in September last year. Many may think it was a long time under test, but it was no easy task getting the unit and the installers to the top of the silo so it was necessary to make sure it was in top operating condition prior to final installation.

The equipment consists of an STC MTR 151, with a FET preamplifier in the receive line. The cabinet also houses the power supply, control unit, cavities and battery, in case of power failure. There is one cavity in the receive line feeding a Hoxin 7.5 dB antenna and two cavities in the transmit line feeding a Hoxin 6 dB antenna. Both antennas are mounted on the same mast with about three metres vertical separation, with an extra set of radials between the transmit and receive antennas.

The repeater is on channel 7050 plus shift; time five minutes; mode FM; power 40 watts ERP; range 70 km range approximately; height 115 metres ASL.

The repeater is monitored most waking hours.
Contributed by Mark Harris VK3KYG

AUSTRALIAN AMATEUR PACKET RADIO ASSOCIATION

The 12 months since the formation of this group has been one filled with activity and growth — membership has grown from 12, in the initial stages, to 130 now. This gives some indication of the rapid increase in interest in this mode.

At the first annual general meeting, it was decided to change the name of the group from the TAPR User's Group to the Australian Amateur Packet Radio Association.

As interest was primarily in AX.25 protocol and equipment was becoming available from other than TAPR, it was felt a less specific name was desirable. Indeed, the group are now supplying a system designed by Chris VK4BCM, which uses a simple modem and a Commodore 64 computer.

A digipeater, VK2RPH, has been installed at Hornsby, on 147.575 MHz, which is providing access between the Sydney and Newcastle local areas.

Wollongong-Sydney-Newcastle-Brisbane Link-up

At Easter, John VK2YGV and Norm VK2TOP from Tamworth set up on mountain tops in Northern New South Wales, and were able to provide a link between Newcastle and Brisbane. Stations in Sydney and Wollongong were able to work into Brisbane for the first time. This is believed to be a record for packet linking in Australia, as the distance is of the order of 600 miles (965 km).

Packet Boards

The association is, at present, supplying the TAPR TNC2 boards as bare-boards with EPROMS and a system manual, for \$125 including postage. This board, when completed, costs a total of approximately \$270. All components are available locally.

Commodore C64, 128, and SX.64 owners —

The packet program written by VK4BCM is currently being distributed by the association. This package comprises a disc with the program and some utilities, a bare printed circuit board and manual for assembly and operation. The printed circuit board is for a simple modem using the EXAR chips 2206 and 2211. This board is connected to the user port of a Commodore computer without using the Commodore RS232C interface. This program will allow the user to program the TAPR TNCs, digipeating, beacons, file transfers, etc. The price of this package is \$48. Parts to complete the modem costs approximately \$30. Software updates will be announced through Digipeat, the Club's Newsletter/Inquiries and orders for these packet units can be made to the Secretary, AFRU, c/o 59 Westbrook Avenue, Waintrout, NSW 2076.

Technical inquiries may be made to Barry White VK2AAB on (02) 487 1428, or in Sydney on repeater 7250.

Membership of the Association is \$6 per year.

Bulletin Boards

At present, there are a number of AX.25 packet bulletin boards operating in Sydney and Newcastle.

These PBBs are all on 147.575 MHz. In the future, some rationalisation must take place. There are two schools of thought, one has it that there should be one PBB for the whole network and the other has it that there should be one for each major area. If the latter is the case, it would mean one in Sydney, one in Newcastle, and one in Canberra.

They will not achieve their full potential until unattended operation is possible, hopefully sometime in the near future.

The association would like to hear comments on this matter from anyone interested.

Contributed by Barry White VK2AAB

OLDEST RADIO CLUB REFORMS

The Waverley Amateur Radio Society meeting was held on 8th April, 1986, at the Edgelyclef Scout Hall, with the aim to re-activate the oldest amateur radio club in Australia. The society was originally founded in March 1919, with a transmitting and receiving licence issued by the then Department of the Navy in August 1920. This licence has now been held continuously for over 65-years. Early experimenters in amateur radio, members of the Waverley Society, started broadcasts from the St Albans Hall in Coogee, and St Lukes in Clovelly during 1921 and 1922, which led to the founding of the present day 2BL and 2FC radio stations. Experiments also took place with television, the licensing authorities prohibiting commercials in 1935.

An enthusiastic group of 27 attended, with interest expressed by more via letters and telephone calls. A brief history of the Society was given, with photographs loaned by the original 1920 sponsor of the radio licence, Gordon Thompson VK2ATP, and photos of the original licence were displayed around other historical documents. A steering committee was formed — Manfred Meyer VK2RV, Collin Mack VK2EAX, Eric Van De Weyer VK2KUR, and Duane Foster VK2VE — who will act as an interim executive until elections can be held. A general discussion followed with numerous valuable suggestions coming from the floor to assist the re-organisation of the Society.

For those interested in electronics, computers, or amateur radio, contact either Duane or Eric, at PO Box 126, Randwick, NSW. 2031.

DEVIL NEWS FROM THE NW Branch

The April meeting saw an attendance of 20, including one new member, Malcolm VK7NCA. Welcome Malcolm. The minutes of the previous meeting were read and accepted, and out of them it was decided that the 10th June should be a special meeting that the ladies could attend. At this meeting, Camp Quality will be spoken about, and as some members will have to attend the Camp for one-week to provide the communications, it is thought the ladies should know in advance the time it will take up and the details involved.

The Club Roster for the Sunday Broadcasts was discussed and a good response was received from the membership to continue doing the relay for all bands. The Club also thanks the many efforts and hard work done by these dedicated members.

The Gong Award was to have been awarded to Max VK7KY. Max was attempting to explain to a visitor how the repeater operates and explained that if an operator spoke for more than three-minutes the repeater would GONG-out. On trying to stress this point, the GONG-out happened — it gonged out. This provided an excellent demonstration. If Frank VK7ZF had not forgotten to take the award to the meeting it would have been presented to Max, however Frank received it again for another month for his bad memory.

The President, Bob VK7KAB, thanked members for being on 80 metres to speak to a group of high school students at his QTH, thus making a good night for the students. Bob is attempting to get a station operational at Savage River High School and even the teachers were impressed with the contacts he made during the night. He is also trying to get the station up at Wynyard High School and would like to hear from anybody who would be willing to assist.

One of the members now has a new operator in his shack — or should it be a second operator? Jack VK7WJ received a small Easter present — a kitten. It was wrapped in Easter paper and presented to him by a young lady, young lady, his adopted grand-daughter. Jack has had to cover quite a few things in the house and the shack but he will not be parting with the present for quite a long time to come.

We have been told that when we do the communications for the horse trials next year, we will have to be on our best behaviour as HRH Princess Ann will be competing (We may have to wear a collar and tie for the occasion).

The horse trials, held at Wynyard, proved to be a successful day. The operators provided emergency communications and score transfer for the event and was the biggest event covered by the Club to this date.

The course had 31 fences for the senior competitors to jump and the novice competitors had 26 fences to jump. There were 12 operators used, 11 at field stations with one at a central base station receiving messages from the field stations.

Members who participated were VK7a ZPT; ZHA; ZBT; EG; AX; WL; ZAP; OL; DC; WJ; KDR and TNS.

Thanks to John VK7ZPT, WICEN Co-ordinator, for this report.

The Billicat Derby, that was held at Lillioo Straight was also a great success, with plenty of spills and thrills for the competitors. Thanks to the operators who participated at both events.

The General Meeting concluded at 9pm, allowing time for the members to complete the evening. Shane Calhoun gave an interesting talk about the State Library. It has 420,000 books, seven mobile units, and a staff of 600. This is one of the best systems in Australia, with 14 branches in the Hellyer region alone.

There is more to this library than meets the eye. A very good example was given to Florian who asked for the name of a certain book and was surprised to know that he could obtain it. Also, Syd VK7SF had a problem repairing tape-recorders and used to borrow a book from the library until it disappeared from the shelf. He asked if it would be possible to see if they still had it and very soon after four hours later it was in Hobart and promised to have it returned for Syd.

Many other facilities available to the public were discussed, concluding with a very good item about cars.

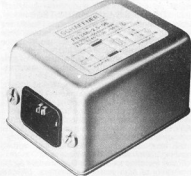
Contributed by Max Hardstaff VK7KY

LIFE MEMBERS

Life membership of the Cofts Harbour and District Amateur Radio Club was awarded to Rick Fletcher VK2BKV and Max Francis VK2BKM, in recognition and appreciation of years of service to the club.

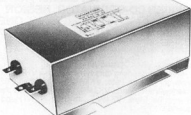
At a special meeting, held on 19th March 1986, members voted unanimously in favour of this motion. Congratulations Rick and Max.

**POWER-LINE FILTERS FROM
WESTINGHOUSE SYSTEMS
FN-346 — FILTER WITH HIGH ATTENUATION**



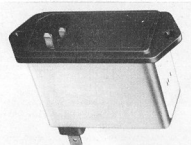
This new power line filter is designed for currents of 1.6; 2.5; 6 and 10 amps. Its excellent attenuation characteristics are similar to those of a two-stage power-line filter. The FN-346 is suited for the suppression of common mode and differential mode interference elimination as well as for the interference elimination of switching mode power supplies and clocks. The power-line filter is equipped with an IEC plug, on the secondary side alternatively with fast-on 6.3 x 0.8 or flex wires.

TWO-STAGE FILTER FOR HIGH CURRENTS



The FN-683 and 684 are designed for currents of 10; 16; 25 and 36 amps. The very good common mode and differential mode attenuation characteristics are effective at a frequency of 10 kHz (frequency range 10 kHz to 300 MHz). These filters are suited for the central computer units and for high current switching mode power supplies. The excellent cost performance ratio makes this product very attractive.

FILTERS WITH IEC-PLUG, FUSES AND EARTH LINE CHOKES



These filters are equipped with two different fuse-holders: type FN-291 with fuse-holder for one fuse; type FN-292 with fuse-holder for two fuses. The fuse-holders can be equipped alternatively with 6.3 x 32 mm or 5 x 20 mm fuses.

They are especially suitable for use in electronic

A R Showcase

equipment such as office machines, calculators and measuring instruments, due to a good common and differential mode behaviour in the range of 150 kHz to 300 MHz. For the application in peripheral equipment, both series are available with an earth line choke, type FN-291E and FN-292E.

Further enquiries about these products should be directed to Westinghouse Systems, PO Box 267, Williamstown, Vic. 3016. Phone: (03) 397 1033.

BF

CB EQUIPMENT

GFS Electronic Imports recently announced their intention to further enhance their extensive range of amateur radio and commercial products by adding Citizens Band equipment to the inventory.

The highly regarded *Electrophone* brand will feature prominently among the 27 MHz and UHF transceivers. Eight years of experience in the amateur and commercial communications field has provided GFS with an expertise that most others selling CB do not have. For example, they are able to advise customers on such subjects as the correct antenna and coaxial cable to use for a particular application.

GFS also have a fully equipped workshop so they may meet the servicing requirements of the CB market including backup service on the products they sell.

In the area of accessories, they stock beams, a range of different low loss coaxial cables, antenna rotators and non-conductive high strength *Debeglass* guy wire.

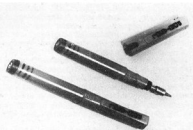
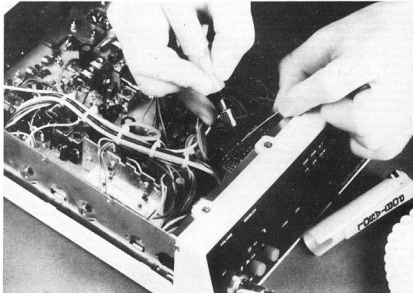
For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Vic. 3132. Phone (03) 873 3777.

BF

ELECTRONICS SHOW

The 1986 Perth Electronics Show will be held from 31st July to 3rd August 1986 at Perth's Claremont Showgrounds, and will be the largest and most comprehensive consumer electronics and homeware exhibition in Australia and the South East Asian region.

Over 12,000 square metres of exhibition space has been sold in 13 pavilions and most major electronic/electrical companies will be represented.



For further information contact Chris Gulland, PO Box 745, West Perth, WA. 6005, or phone (09) 382 3122.

BF

PORTABLE SOLDERING IRON

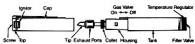
The Portasol is a portable pen-sized soldering iron used by people in the electrical, mechanical and engineering fields.

It is a butane gas powered iron, ignited by a flint ignition in the cap. It has a 10 to 60 watt temperature control and each fill with gas lighter fuel gives 60 minutes of continuous use. The Portasol also comes with three tip sizes and each tip gives 30 hours of use. (Maximum tip temperature is 400 degrees C.

It is the smallest soldering iron available and it can be used in almost all conditions, indoors and out. The design features also include important safety advantages. When the cap is replaced the gas is automatically switched off and when the user is finished with the Portasol there is no need to wait for it to cool, or find a suitable place to rest it as the cap is able to withstand up to 250 degrees. There is little waste or leakage since the user can switch on and off at will. It also takes just 20 seconds to reheat, and because it is static free, it is ideal for use with CMOS and other static-sensitive components.

For more information contact Stephen Treble or Don McNeill at DRM Industries on (02) 997 5522, or write to 14 Tengah Crescent, Mona Vale, NSW. 2103.

BF



NEW LITERATURE

Analog-Digital Conversion Handbook, a comprehensive guide to conversion for engineers and scientists, contains 22 chapters and is published by Analog Devices, Inc and Prentice-Hall.

The third edition of this well-known handbook has grown to 700 hard-bound pages, with seven new chapters, bibliography, and index. An easy-to-use table of contents summarises the book's five sections, which range from converter uses in circuits, sub-systems and systems to *Guide for the Troubled* — preventing and curing conversion-system problems.

The section, *A/D and D/A converters*, discusses operation, technologies, architectures, designs and how they are used for best results. A new section, *Converters for Special Applications*, covers conversion for video speeds, synchros and resolvers, high resolution, and wide dynamic ranges — as well as VIF and FIV. A new section entitled, *Related Circuits and Devices*, includes sample-holders, references, switches and multiplexers and DSP ICs.

The book is available from Parameters Pty Ltd, 25-27 Paul Street North, North Ryde, NSW. 2113; or 1064 Centre Road, Oakleigh South, Vic. 3167 to whom all enquiries should be directed.

LINEAR AMPLIFIER

The Transworld Electronics T500M is an all solid state linear amplifier designed for land or marine mobile operation or for base station use with the optional AC power supply. The amplifier uses a new series of high power RF transistors operating directly from a 12 volt power source and does not

require a power supply for mobile operation. The amplifier draws no standby current and only draws maximum current on voice peaks. This keeps the average current requirements to a level well within the capabilities of modern vehicle generating systems and for the first time makes high power land, air or marine mobile operation a practical reality.

The amplifier is designed for remote control and can be mounted in any convenient location.

It covers the range 2-30 MHz, and the broadband design means there are no tuning adjustments for any frequency in the range. The drive requirements are 60 watts minimum, and the gain of the amplifier is typically 10 dB. This tenfold increase in power output gives a substantial increase in signal strength and does much to compensate for the low efficiency of the mobile antenna. The amplifier is compatible for use with virtually any SSB transceiver with a power output in the range 60-150 watts PEP.

The broadband design means there are no limitations on frequency coverage or number of channels.

Installation is simple. The amplifier is inserted in the coaxial line to the antenna, and the power and control connections are made. The only operational adjustment is to set the exciter ALC to provide the correct drive level.

The T500M is rated for operation over the temperature range 30 to +60 degrees Celsius. The duty cycle is 50 percent transmit/receive at an ambient temperature of 25 degrees Celsius in the SSB and CW modes. The duty cycle should be reduced at higher temperatures. A thermostat on the heat-sink switches the amplifier off if the heat-sink temperature exceeds 75 degrees Celsius.

For Technical Specifications and further information please contact Scalar Distributors Pty Ltd, 20 Shelley Avenue, Kilsyth, Vic. 3137, phone (03) 725 9677 or Sydney (02) 502 2886, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

DOUBLE RIDGE MAGIC TEES

Adams-Russell waveguide Magic Tees are designed to handle extremely high power while maintaining excellent overall performance characteristics over 3:1 bandwidths.

This capability allows Adams-Russell to offer proven designs with measured electrical performance as follows:

WRD650D28 frequency range 6.5-18.2 GHz; VSWR 6.5-7.2 GHz 2:1 maximum, 7.2-18.2 GHz 1.5:1; coupling 3.1 \pm 3 dB, collinear isolation 14 dB minimum; E-H port isolation 30 dB minimum. WRD750D24 frequency range 7.5-18.2 GHz; VSWR 1.5:1 maximum; coupling 3.1 \pm 3 dB; collinear isolation 14 dB minimum. E-H port isolation 30 dB minimum; power handling * 50kW peak 1kW CW average.

* Power handling testing has been limited by the availability of high power transmitters. Ultimate levels are yet to be determined.

Insertion loss (dissipative and reflective) are included in the coupling tolerance.

Mechanically, Magic Tees are supplied in a two inch (50mm) cubic form with cover flanges (clearance or tapped holes with helical inserts available). Gasket grooves can be added to the tee as well as a built-in 50 watt fourth port termination for those who need only three ports.

For further information contact Scalar Distributors Pty Ltd, as above.



WICEN News

CYCLONE WINFRED

Ted Gabriel VK4YG
WICEN CO-ORDINATOR, REGION ONE
PO Box 245, Ravenshoe, Qld. 4872

This year's Wet Season in Northern Queensland began quietly enough and appeared as though it would be fairly dry in some inland areas of the cattle country. However, on Wednesday, 29th January, monsoonal activity, about 100 nautical miles (185 km) east of Cooktown began to intensify and the cloud mass, seen by the weather satellite, began to take on the familiar circular pattern of a cyclone, with the barometric pressure falling steadily.

The cyclone, by this time code-named *Winfred*, started moving slowly to the south-east, intensifying as it travelled parallel to the coast-line.

Heavy rain commenced falling over a wide stretch of the North Queensland coast, rivers and streams began to rise, and by evening, the railway line near Babinda was cut by rising floodwaters.

Region One WICEN operators commenced cyclone track plotting, with Alan VK4BAG, Cairns Area Net Controller, in charge of the VHF stand-by on the VK4RCA repeater.

Amateurs in areas likely to be affected by the cyclone checked into the net with weather and equipment serviceability reports.

Townsville Region One-A WICEN operators were also alerted, and a HF link was established on 7080 MHz.

Cyclone track plotting is carried out on large scale charts marked with a latitude and longitude grid, showing the coast-line and main population centres. Since the hourly meteorology department reports broadcast by OTC Coastal and Shipping Radio Stations are used, distances are expressed in nautical miles and wind speeds in knots. (Townsville and Thursday Island Radio Stations transmit cyclone watch messages and gale warnings on 2.201 and 4.428.7 MHz).

On the morning of the 30th, *Winfred* was located at 15 degrees 10 minutes south and 147 degrees east, with a central pressure of 975 mbs and wind speeds near the centre of 70 knots (130 km/h). Later in the day it became stationary, although intensifying and the pressure had fallen to 970 mbs.

During Friday, she again continued to move slowly parallel to the coast until she was about 100 nautical miles east of Cairns. *Winfred* then turned south and then later in the day headed ominously south-west towards the coast. At this time the central pressure was 965 mbs and wind gusts were 100 knots (185 km/h).

Region One WICEN remained in contact with coastal amateurs through VK4RCA with more stations checking in during Friday night. Heavy rain was falling in the area between Cairns and Innisfail and local winds were increasing to gale-force.

During Saturday, 1st February, *Winfred* continued moving slowly towards the coast. With continual rain and increasing wind speed, road and rail traffic was disrupted. Cairns International Airport was closed to traffic and by midday, the barometric pressure had fallen to 960 mbs, with centre wind gusts to 119 knots (220 km/h).

The regional State Emergency Service (SES), which had been on stand-by alert, went into activation in all coastal centres and on the Atherton Tablelands. Communication operators, including many amateurs, were then called for duty at their centres, together with rescue crews.

As wind speeds increased, falling trees and flying debris cut power lines, blacking-out the whole area. Fortunately, most SES Centres have generator sets and batteries to maintain communications, however, late Saturday, telephone links in the area also failed throwing an extra load on the radio sections.

The telephone failure was caused by the large microwave dish aerials, on Mount Bellenden Ker being moved off beam-line on their fittings by wind gusts in excess of 135 knots (250 km/h).

It was at this time that the SES requested assistance from WICEN as their VHF and UHF channels were over-loaded with the extra traffic. HF and SSB frequencies were also fully engaged with local and relay traffic.

Mike VK4AMO, the Cairns Club Liaison Officer, activated the Club Station, VK4HHM, ably assisted

by Claude VK4KDG and John VK4VKL.

Message handling commenced when VHF links were set up with Peter VK4EDK, at Innisfail SES Headquarters, Mario VK4MS, in Ingham, and the Townsville Club, VK4WIT, at their SES Headquarters.



High and Dry! A victim of Cyclone Winfred.

Photograph courtesy Innisfail Advocate

Winifred crossed the coast late on Saturday evening south of Innisfail, with the eye passing over Silkwood where a short period of calm was experienced.

Wide-spread structural damage was caused to buildings (particularly older style wooden houses), sugar cane crops were flattened, farm buildings destroyed and roads were flooded or blocked by falling trees. The towns of Mila Mila and Malanda were in the path of the fury and many houses were untroofed and damaged. One man was killed when he was blown off the roof he was attempting to fasten down.

Winifred moved inland in a westerly direction, gradually losing intensity but still accompanied by heavy rain which swept away or damaged bridges on inland roads.

As soon as the wind speed abated, SES rescue crews, assisted by volunteers and Army and Navy units, moved into the disaster area to render assistance to the injured and homeless survivors.

The SES called for volunteers from the Cairns Radio Club with VHF hand-held and mobile units to provide communications for the Army and Navy units.

Club President, Colin VK4EX, together with Mike VK4AMO, Ray VK4BRC and Nick VK4YT moved with the service units whilst John VK4VKL was with the SES team as a driver.

Casualties and injuries were surprisingly light thanks to the swift warnings by Police and SES personnel through local broadcast and television stations before the blackout.

As soon as weather conditions permitted, several injured persons were airlifted to Cairns Base Hospital from the disaster area by the SES and other helicopters.

The Army unit organised a team of local vehicles to light the innisfail airstrip so that an RAAF Hercules aircraft, loaded with tarpaulins and other urgent supplies, could carry out a night landing.

For the weary radio operators there were many more hours of traffic handling, as relief operations were stepped-up and the mammoth clean-up task began in earnest. Whereabouts and welfare reports from anxious relatives also added to the workload.

Finally, when Telecom workers had restored telephone links, WICEN and many SES Centres were able to close down after a job well-done.

The extent to which amateur radio operators helped to maintain the SES HF Network and provide general WICEN VHF communications during the emergency can be seen from the lists below. Some 35 North Queensland amateurs served their communities during Cyclone Winifred and their efforts are a credit to the amateur radio fraternity.

POINTS OF INTEREST TO OPERATORS

In recent years, the SES has acquired more sophisticated radio equipment and established a chain of UHF repeaters along the Queensland coast. However, this has caused problems with the training of communications operators who did not have experience in this new mode. Thus, for some time, amateur radio operators have been involved with SES communications as Group Leaders, instructors, and operators, particularly in smaller country centres. WICEN, through local clubs with facilities such as VHF repeaters, have been able to provide extra channels.

Also, WICEN being an independent service, has the ability to prepare before the event, keep a cyclone track plot, gather information from operators and be ready to activate a full network when required, whereas the SES is not usually activated until emergencies happen and/or a disaster area is declared.

Cyclones, which are violent rotating windstorms, accompanied by heavy rain and low barometric pressure, cause heavy destruction which is confined mainly to areas on either side of

their track. Thus communication centres with VHF repeaters just clear of that track may be able to remain serviceable and be ready to assist after the cyclone has passed.

The Cairns Amateur Radio Club's two metre repeater VK4RCA (channel 6950), is located on Mount Bellenden Ker, which, at an altitude of 5200 feet (1584m), commands a large area of the rugged mountains and plateaus.

The repeater and the SES two-channel UHF repeater remained on air during the entire period, in spite of being subjected to estimated wind speeds gusts between 135 and 170 knots (250 and 300 km/h).

The VK4RCA antenna is fibreglass and, while suffering some surface cracking, is still serviceable. An aluminium Yagi antenna, intended to link with the Townsville repeater VK4RAT, vanished during the blow.

Past experience with antennas at this site has indicated that high wind speeds cause excessive vibration in aluminium elements which results in crystallisation and corrosion, leading to eventual failure under gusty conditions. These points should be considered when designing aerials for mountain-top repeaters.

The CARC is preparing to activate its second two metre repeater, VK4RTA, on channel 6675. This repeater will be situated at Longlands Gap, at the southern end of the Atherton Tablelands. At an altitude of 3770 feet (1150m), it will also cover a wide area, including much of the lonely Kennedy Highway to the Gulf Country. Its ability to back-up VK4RCA in emergencies will be of vital importance to the region.

Tropical Cyclone Watch and Cyclone Warning messages from the Bureau of Meteorology are issued to the public through local broadcast and television stations and these are expressed in the metric system.

For WICEN operators, and others who may be involved in cyclone track plotting, a table of conversion factors follows:

- kilometres = statute miles x 1.609; statute miles = kilometres x .6213
- kilometres = nautical miles x 1.853; nautical miles = kilometres x .5396
- statute miles = nautical miles x 1.1515; nautical miles = statute miles x .8686

On nautical and plotting charts, one degree of latitude equals 60 nautical miles measured at the location's latitude.

Cyclone watch and warning messages, plus gale warnings are broadcast from the following Coastal Radio Stations on 2.201 and 4.428.7 MHz (SSB Phone) at the times shown.

Brisbane: VIB 2233; 0318; 0833 UTC
Rockhampton: VIB 2248; 0218; 0833 UTC
Townsville: VIB 2133; 0333; 0748 UTC
Thursday Island: VIB 2303; 0248; 0648 UTC

All are 24-hour service except Rockhampton. For Canberra and Darwin facsimile transmissions refer to Australian notices to mariners 1/186, or the Bureau of Meteorology.

Amateur radio operators involved with the SES were: Mike VK4AMO; Nick VK4YT; and CARC members (Cairns) — Bob VK4WJ; Allan VK4PS; John VK4AFS; and TARC members (Townsville) — Fred VK4MFW (Atherton) — Ted VK4YG; David VK4AOD; John VK4MJH (Ravenshoe/Heberton) — Brian VK4VDC; Terry VK4ATY (Eacham Shire) — Mario VK4MS (Ingham).

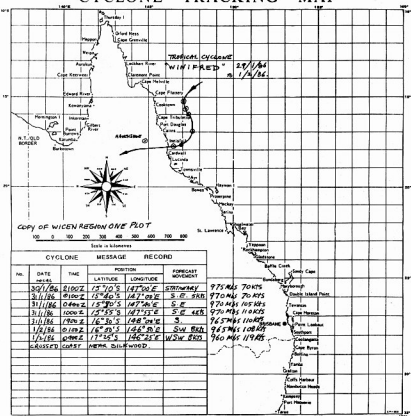
WICEN-CARC members involved in disaster area communications were: Alan VK4BAJ; Colin VK4EX; Ray VK4BRC; Albert VK4CL; Gordon VK4AGZ; Will VK4ZNG; John VK4AJE; Peter VK4BDC; Norman VK4FGG; Tony VK4AFG; John VK4ASZ; John VK4VKL; Barry VK4VCO (now VK4FCO); Claude VK4GDO; Bill VK4FET and Dale VK4KDM.

REFERENCES AND ACKNOWLEDGMENTS
Australian Notices to Mariners: RAN Hydrographic Service
Cyclone Tracking Map: Bureau of Meteorology
Region One WICEN Plan: VK4YG
Photograph: Innisfail Advocate

MANLY WARRINGAH RADIO SOCIETY

The Annual General Meeting will be held on 9th July 1986, at 7.30pm. See next month's Club Corner for full details.

CYCLONE TRACKING MAP





VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2150

The Annual General Meeting was held on 5th April 1986. A report has been given to members via the Broadcast on the 6th April. A written report on the meeting will be included in a later Mini-Bulletin.

There were 645 ballot papers returned for the election. Of these, 25 were informal. Subsequently, a further 30 showed up as a result of late posting. Those elected were as follows: *Mary Jane Cant VK2CMJ; Roger Henley VK2ZIG/NWH; David Horstall VK2KFU; Peter Jeremy VK2PJ; Tim Mills VK2ZTM; Jeff Pages VK2BYY and Dennis Williams VK2XDW.*

The meeting opened at 1410 and closed at 1850 hours. The Returning Officer for 1986/87 is Peter O'Connell VK2EMU.

VK2 1986 COUNCIL

The new Divisional Council met on Friday, 11th April and the major office-bearers for 1986-87 were elected as follows:

President
Vice-Presidents

Secretary
Secretarial Assistant
Treasurer

Assistant Treasurer
Affiliated Clubs Liaison

Member Services
Repeater Committee
Chairman
QSL Bureau Liaison

*Peter Jeremy VK2PJ
Roger Henley VK2ZIG
Tim Mills VK2ZTM
Jeff Pages VK2BYY
Roger Henley VK2ZIG
David Thompson
VK2BDT
David Horstall VK2KFU
Mary Jane Cant
VK2CMJ
Roger Henley VK2ZIG
Dennis Williams
VK2XDW
Dennis Williams
VK2XDW*

Dural Property Officer
Parramatta Property
Officer
Broadcast Officer
Mini-Bulletin Editor
New Membership

Publications

The Education Service, Wiclen, Dural, Parramatta and Repeater Committees will be notified in a future Mini-Bulletin.

CLUB INSURANCE

A report on a (possible) Public Liability Insurance package has been prepared and distributed to many of the clubs in the State. Copies are available from the Divisional Office.

ACTIVE AGAIN

Waverley ARC (VK2BV) is currently being reformed after a few years of inactivity. It is to cater for those with radio and electronic interests in Sydney's Eastern Suburb.

A reminder that these notes can only cover a small part of the activity in the State. Interested amateurs listen to the Sunday Broadcasts — do you?

NEW MEMBERS

The VK2 Division would like to welcome the following new members who were in the April intake.

S Brighton VK2DSB, Illawong; J W Dargan Assoc, Greenwich; S Dudgeon (Ms) Assoc, Chatswood; D K Findley VK2KDF (Overseas); J J

*Peter Jeremy VK2PJ
Roger Henley VK2ZIG
David Horstall VK2KFU
Tim Mills VK2ZTM
Dennis Williams
VK2XDW
David Horstall VK2KFU*

Gerhard VK2ZTH, Wagga Wagga; L J Gray Assoc, Northbridge; R A Hocking Assoc, Tenambit; C V D King VK2NHL, Botany; J G Lucas VK2CJL, Wahroonga; M Nowicki VK2JMN, Canley Vale; A E Sheppard VK2EOD, Maroubra; J A Vignolo VK2CJV, Ryde.

1985 HOME BREW CONTEST

The winner of the 1985 contest was Michael Jones VK2KMU, who constructed, from a kit article, the Omega, nine-band SSB/CW HF transceiver. The project was described in the English magazine *Ham Radio Today*. Michael was presented with his prize at the recent Seminar.

Now is the time to remind all that the present years contest is now open, entry forms are available from the Divisional Office and the closing date is the 31st December 1986.

JUNE HOLIDAY WEEKEND

A reminder that, over the weekend of 7th and 8th June, the Oxley Region ARC will be conducting their Annual Field Day at Port Macquarie.

REPEATERS

The Armidale Amateur Radio Club has submitted an application to establish a 70 cm repeater on an elevated site to the east of the city, to serve the region. The requested channel is 8175. Call sign is VK2RNT. The application is in order for processing.

During April, a posting of information was made to all repeater groups. It was mainly to update their listings for the new Call Book. If your group is as yet to return the various forms, please do so without further delay.

VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

ANNUAL GENERAL MEETING

The Annual General Meeting of the Victorian Division of the WIA was held on 14th May. A full report of the AGM will appear here shortly.

TIME CAPSULE

The Time Capsule was sealed at the AGM, and will not be re-opened until 2010 when the Institute celebrates the WIA 100th Anniversary.

WANTED OR NOT—WANTED SERVICE

A disposals equipment service is available to members through the Sunday Morning Broadcasts via VK3BW.

The WIA has received permission from DOC to broadcast details of equipment for sale or items wanted. The service can include the price being asked for the equipment.

DOC has stressed that the offering of disposals equipment on-air is only authorised through the WIA weekly broadcast. This privilege does not extend to hand-holds, or general QSOs by radio amateurs.

Amateurs who have equipment they wish to dispose of, or are looking for a particular item of gear should write to the WIA Victorian Secretary. The information will be checked and put on a list for the Broadcast. Anyone wanting to make contact with the potential seller or buyer of an item broadcast may contact the Wireless Institute Centre between 10am and 3pm weekdays for further details.

LINTON-HARRISON PAPER

The Victorian Divisional Council met on 20th March and at the request of Jim Linton VK3PC, the paper *Amateur Radio — Future Direction* was discussed.

The paper proposed four steps to improve the current licensing and examination standards and conditions:

Introduction of a new Novice licence with a lower grade theory examination

Enhancement of the current Novice licence, and the addition of Data Transmission mode privileges

Introduction of an Intermediate Novice licence with additional privileges

Removal of Defined Mode restrictions and an increase in the power limits.

Following discussion, a motion proposed by VK3XV and seconded by VK3BBM was carried by Council as follows:

Council does not agree with the lowering of the technical standards for entry into the amateur ranks in any way, and believes persons not achieving the current standard are well catered for by the Citizens Band service.

Council would be prepared to support an up-dated Novice licence of the same technical standard, with additional questions to be included on data transmission modes — CW to be retained.

Council considers Novices should then be allowed data transmission privileges on a portion of the UHF band, and on a 100 kHz segment of the 10 metre band below 28.350 MHz. This is to allow contact with US Novices using data modes.

Council believes Novices could be allowed a small segment of the UHF band for voice transmission, and possibly a spot frequency on VHF to make use of existing digital repeaters.

To provide an additional entry point into amateur radio for Computer Hobbyists and experimenters, Council would give serious consideration for an additional licence class. This licence would be exactly the same as the up-dated Novice — without the CW requirement. Holders of this class of licence would have no HF privileges at all.

Council would support the removal of Defined Mode restrictions for AOC and LAOC holders in the VHF and UHF spectrum only. Council considers the Power Limit is not within the scope of the discussion paper, and should be discussed as a separate issue. The subject of Unattended operation is believed to be already addressed in the updated DOC Operating Handbook.

(Note: Current holders of a Novice licence would automatically be allowed all privileges of the Up-dated Licence).

Council requests that all amateurs take special note of paragraph 3 of the motion which states the council is prepared to give consideration to this option.

Members could be of the opinion that, if this proposal was to be recommended, it may well have an adverse effect on our hobby and Council is not prepared to give any decision without reference to the members of the VK3 Division.

All members should give this matter serious thought and make your wishes known to Council in writing. All correspondence should be addressed only to The Secretary, WIA (Victorian Division), 412 Brunswick Street, Fitzroy, Vic. 3065.

NEW MEMBERS

We extend a warm welcome to the following amateurs who became members of the Victorian Division during March 1986.

J Chan VK3CBO; James Gay VK3BBF; John Hill VK3ASS; John Ho VK3AVF; Henry Lim Meng Fung 9M2HL; Paul McMahon VK3DYP; Jackson Perkins and Douglas Richards VK3CCY.



QSP

TOWER FUND

Amateurs in Kentucky have established a fund to assist John Therns W1WT with legal expenses to fight restrictive tower ordinances. John's case, which has been remanded from the Federal Appeals Court back to the Federal District Court, has already cost him an estimated US\$16,000 in legal fees with no end in sight.

From The ARRL Letter



VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPQ, Brisbane, Qld. 4001

1986 RADIO CLUB CONFERENCE

Again this year, the venue for the Conference was Griffith University, on the south side of Brisbane. This campus is set in a lovely bushland setting and is very accessible via the South-East Freeway, being an easy drive of about 10 minutes from the centre of Brisbane City. The meeting room is good acoustically and has a large blackboard, overhead projector and the seating rises in tiers from the front. Each delegate sits at a desk and has an unobstructed view. The cafeteria was available for meals but this year, accommodation was not available. This was notified only a couple of weeks before the Conference and threw the organising committee into disarray. However, a few telephone calls later and the situation was resolved, accommodation being arranged in the general area near to the University.

There were 17 clubs represented, from Cairns in the north to the Gold Coast on the southern border. Visitors to the Conference were Michael Owen VK3KI, the Honourable Ian MacPhee MHR, the Shadow Minister for Communications, Lance Bickford VK4ZAZ, from SES State Headquarters and John Bews VK4KJB, who gave a talk on Packet Radio.

On Sunday morning, Mr MacPhee spoke to the gathering and, not only sought questions from the delegates, but spent considerable time in asking questions of the delegates. What better way for a politician to gain knowledge of a special subject than to ask the people at the very grass-roots of the matter. All felt that Mr MacPhee's visit was a very valuable one — to both parties.

The Conference discussed the paper, *Amateur Radio — Future Direction*. Thoughts expressed were many and varied but most were not in favour of the lowering of standards or concentrating on recruitment from any one group. Most agreed that

our object should be to make the public more aware of amateur radio. There were no real solutions found but the paper certainly has brought forth plenty of discussion and this, most would agree, was its aim.

Both club motions and Federal motions for the 1986 Federal Convention were dealt with, but cannot be recorded here, the minutes of the Conference run to some 22 pages of foolscap.

Both of the Queensland Federal Representatives gained valuable insight into the general feeling toward the motions for the 1986 Federal Convention and, as in past years, the Queensland voice over the ANZAC weekend was heard loudly and clearly at the Convention in Melbourne.

The WIAQ Council is greatly indebted to these people who worked so hard to bring the 1986 RCC together, Anne Minter VK4KZX; Barry Ker VK4BKI; Aaron Hoppe VK4AHO; David Jones VK4NLV and Anne Stafford.

NEW UHF REPEATER IN QUEENSLAND

The Dalby and District Amateur Radio Club have installed a UHF repeater on Mount Mowbullen in the Buraya Mountains. The frequencies are 438.700 MHz downlink and 433.700 MHz uplink. Please amend your Call Book to include this information.

CORRECTIONS TO 1985-86 CALL BOOK

On page 120 — The South-East Queensland Teletype Group meeting should read the first Friday of each month.

On page 113 — The Broadcast Directory, in the VK4 section, delete the words and 20 metres RTTY at 2000 hours.

The SEQTG runs a news broadcast at 1000 UTC on Monday evenings. The frequencies are — two metres, channel 7050; 3.630 MHz and 7.045

MHz. Call sign VK4TTY.

CYCLONE WINIFRED

CAIRNS PARTICIPATION

When Winifred started forming in the Coral Sea on 29th January 1986, VK4BAJ, VK4AMO and VK4YG commenced a tracking plot and set-up a standby Network. Winifred crossed the coast on 1st February, south of Innisfail with a centre pressure of 960 mbs and estimated 220 km/h wind gusts. There was considerable damage to buildings, crops, power and telephone services, and road and rail services were cut over a wide area.

A Disaster Area was declared and SES channels became overloaded. WIGEN was requested to provide a VHF network. SES also asked for amateurs with hand-held units to assist the Army and Navy teams. Some 35 amateurs were involved and were able to carry out the tasks allotted to them by the SES.

Official involvement of the Cairns Amateur Radio Club commenced on 1st February and the Club station was manned. Brisbane SES requested a link be set up between Townsville and Cairns, and this was established by the use of the VK4RCA Repeater.

TOWNSVILLE PARTICIPATION

The SES Regional Office was manned from the evening of the 1st February until 3rd, with very little sleep being had by the participants. The SES transceiver at Innisfail failed and Peter VK4BDK made his way, at the height of the cyclone with considerable risk to himself, to get them back on-air.

All amateurs involved were praised for a job well-done and official acknowledgment was received from the Assistant Director of SES Headquarters in Brisbane.

Five-Eighth Wave



Jennifer Warrington VK5ANW

59 Albert Street, Clarence Gardens, SA. 5039

It is with regret that we report the passing of two well-known Old Timers, Harvey Judd VK5HQ and Alan Heath VK5ZX. Both had been ill for some time and in both cases, it would have been a happy release from pain.

Our sympathy goes to both families and, in particular, to Alan's case to his son Chris VK5ZZX, to Alan's brother Colin VK5FX and Colin's son, Rob VK5ARX.

FURTHER J150 AWARDS to 31st March 1986.

13	VK1HZ	27	VK5SJ(3rd)
14	VK5NBB	28	VK3DJU
15	VK5SJ(2nd)	29	VK2JBM
16	VK5ATU	30	VK2NAN
17	VK3NLR	31	VK6HT
18	VK5OU	32	VK3BCD
19	ZL3KR	33	VK5AJK
20	VK2PXS	34	L40885
21	VK2KPV	35	P29JW
22	VK2CKW	36	JQ1EBK
23	VK2CPI		
	VK5PWW		
	*equal		
	time for 150h		
	point		
26	VK5NDB		
25	VK2PKT		

AMATEUR TELEVISION GROUP

The SA ATV Group have had some excellent publicity recently. Thanks mainly to Max Whiting VK5KTZ, who just happens to work in the *Advertiser* newspaper. Max did an excellent article on Jamie Jenkins VK5ZAA, one of the youngest

members of the ATV Group, in the Saturday Magazine section of the *Advertiser*. This was in turn picked up by Channel 9 in their *C'mon Kids* program for children, where they interviewed Jamie, and during the session he called up on-air and Lee Cordell VK5NK, one of the oldest ATVers, came back and spoke to Jamie.

I was recently invited to join the ATV Group at their next bi-monthly meeting. What I did not know at the time was that their next meeting was to be a tour of the new Adelaide TAFE college (recently opened by the Duke of Edinburgh), and in particular, the Educational Multi-Media Department where programs are made for schools, etc.

Our guide was John Ingham VK5KG, Federal Video Tape Co-ordinator.

What an eye-opening tour it was, believe me. Television will be watched with a far deeper understanding on my part, in future, and I am sure that the ATV boys would have gained even more from a technical point of view than I did.

My thanks to Rod Rees VK5ACA, their President, Charlie Baldacchino VK5ACF, their Secretary and everyone else for an evening well spent.

BUSINESS FAX TAKES ON

Sending business communications by facsimile has taken on in Australia with industry sources estimating there are now around 30 000 FAX machines in use. This represents an increase of about 33 percent in 12 months.

— WIA —

S A DIVISION EQUIPMENT SUPPLIES

The famous VK5 2m preamplifier
kit . . . still \$25

12V 5A P/S kit . . . \$15
Connectors
Capacitors
Resistors
Semi-conductors
Toroids
and more

Send SASE for Complete Price List
Cheques to WIA SA Division

Post and Packaging . . . \$2.50 per
order

SA Divisional Members — post free

Mail to — 3 CORAL SEA ROAD
FULHAM, SA. 5024

A886



Over to You!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

DON'T KNOW WHAT I WOULD HAVE DONE

Permit me to add my voice with others on the benefits which flow from WIA membership. In particular, the activities of dedicated people responsible for education and skill building of new members entering amateur radio deserve special mention.

First, the Education (Correspondence) Course supervised by Cec Bardwell was a vital ingredient in getting basic insights into radio necessary to pass the DOC exams. Self study may suit some but if you have not had to sweat for exams for many years, then I can thoroughly recommend the course as well worthwhile and cash wisely invested. Constant review of the notes and problem papers got me there.

Second, the Education Service/Slow Morse Panels of VK2 and VK5 were also vital in being able to acquire the necessary CW skills in sending and receiving. It is in this area that I respectfully offer the following suggestions for better practices.

CW conversations I have tuned into confirm the wide variety of topics in the general traffic. All of the practice passages are educational in the sense that you finish knowing more about something than you did when you began — I have learned how to curry pork chops, about the Urunga Shire Maintenance Program, blood pathology, ocean liners, exporters and more.

In my view, 25 to 50 word passages should avoid those passages that can be journalised. For example, recipes give nouns, measures and timings, etc which are repetitive. Likewise, continuous passages without subject change but with speed change lend themselves to journalising quite readily, and more so if your general knowledge of the subject is wide. Many I heard went for long periods without any numerals. Practice passages which covered the whole alphabet, with numerals and punctuation would seem to be preferable, and one that fills the bill quite well is the weather forecast/synoptic situation. Those really kept me on my toes!

Another suggestion I would make is that, similar to the DOC exam, the code be sent at eight and 12 words per minute, spaced to give seven, nine and 11 words per minute overall. I don't underestimate the skill necessary to do this well.

In conclusion, I would like to thank the WIA office bearers and volunteers involved in these activities. I don't know what I would have done without them.

Alan Smith VK2BHF,
10 Banool Avenue,
St Ives, NSW. 2075.

PENFRIEND WANTED

My name is Freddy and I am 35-years-old.

I would like to correspond with some Australian radio amateurs so I may learn more about Australia, and amateur radio in Australia.

Cordially,

Freddy Henckens ON7WT,
Merelstraat 37,
3550 Heusden — Zolder,
Belgium.

TECHNICAL CORRESPONDENCE —

SATELLITE PROGRAMS

I refer to VK3CQ's computer program published in June 1985 AR and his accompanying article on its use for the location of geostationary satellites, published in May 1985 AR.

I find that the program has shortcomings which limit its use, some of which are easily corrected. 1 The program gives accurate results only if the observer is located in the Southern Hemisphere. If a northern latitude is entered, the calculated azimuth is in error. This can be corrected by the addition of a single line near:

331 IF LA > 0 THEN AZ = AZ + PI

The program generates azimuth angles which may exceed 360 degrees. This may be easily corrected by the addition of a further new line:

332 IF AZ > 2 * PI THEN AZ = AZ - 2 * PI

2 Secondly quite randomly dependent on the input parameters the program will fail due to overflow error. This is annoying, because of its seeming randomness. These overflow errors may be avoided by using the arc cos function for DEF FNA(X) in line 300 in lieu of the $\pi/2 - \sin X$ function used by the author. Line 300 then becomes:

300 DEF FNA(X) = ATN (SQR(1-X*X)/X)

However, this last change will give rise to overflow errors if the observer is on the equator and LA = 0. The value of X calculated in line 200 will then also equal 0 and it follows that the attempt to divide by 0 in DEF FNA(X) will again produce an overflow error. This behaviour is quite predictable, unlike the overflow errors produced when $\pi/2 - \sin X$ function is used in line 300, and close approximations of azimuth angles may be obtained by entering a small +ve value such as .01 for LA instead of Zero.

It should also be noted that this last change will give rise to overflow errors if the observers latitude LA = ±90 degrees, ie he is at either the North or South Poles. This is of no consequence of course, as the satellites are too far below the horizon at the poles to be of any use to amateurs who might perhaps venture there.

Re the Morse Code Generator Program, AR January 1986 pp8. The reproduction of the program listing is too small and too faint for me to read other than with great difficulty. I certainly could not type it into my computer without making literally hundreds of errors. May I make a plea for larger, darker print for such listings in AR for the sake of old timers, such as I. I assume the listing was photo-reduced to permit printing in two columns.

Yours faithfully,

Murray Higgins VK5AQM,
15 Beta Crescent,
Panorama, SA. 5041.

Editor's Note: Computer program listings are photographic reproductions when printed in *Amateur Radio* printed in this manner to avoid typographical errors and reduced to conserve space. This is the reason that it is imperative that contributors send computer programs printed with a dark black ribbon. We know of the difficulty and are looking at alternatives such as computer bulletin boards and packet radio. Any other suggestions are welcome.

TECHNICAL CORRESPONDENCE

An obvious error has been pointed out in the Four Watt CW Transmitter article for Novice Notes, April AR. The last paragraph suggests a crystal frequency range of, from 3.526 to 3.800 MHz. This, of course should read from 3.526 to 3.580 MHz.

Now that many transmitters have been successfully constructed by other readers, indications are that operating the transmitter from a supply voltage of greater than the nominal 12 volts can cause excessive heat to be generated by the output MOSFET. There are three solutions to this problem:

- fit a larger heat-sink to Q4, or
- reduce the supply voltage to 12 volts or
- reduce the value of bias on the gate of Q4 by changing R14 to 56 ohms.

My apologies for any problems that may have been caused. It appears that the IRF510 MOSFETs may have been considerably more spread than was first assumed.

Yours faithfully,

Drew Diamond VK3XU,
Lot 2 Gatters Road,
Wonga Park, Vic. 3115.

SPUTNIK RECORD

I am interested in locating an authentic recording of the first satellite to be placed in earth orbit, namely, Sputnik 1.

I am sure someone in the amateur ranks must have made a recording of this satellite.

The recording is required for a talk/presentation I am preparing on the topic: Satellites.

Any assistance would be greatly appreciated.

Yours sincerely,

John Dunkley VK5JE,
9 Elva Avenue,
Pooraka, SA. 5095.

AN INDIFFERENT DEALER

Recently I decided a particular make and model of rotator (as advertised) might suit my need.

To obtain a brochure on that item cost three interstate telephone calls (to the one dealer) over a period of four weeks.

A note from the dealer read in stock — \$725 including delivery and insurance. Immediately I contacted the dealer (again by telephone) for the transfer of the above sum.

Alas! We don't have this item in stock. Perhaps in six or eight weeks!

Henceforth, I will remember this costly and time-wasting exercise, and can only have scorn and contempt for the advertising and trading activities of this dealer.

Frank Walsh VK5JW,
PO Box 122,
Blackwood, SA. 5051.

COMING TO GRIPS!

I am finding Amateur Radio is becoming a much better publication than when I first started getting it a few years ago. In my opinion, you are really coming to grips with what members require. Keep up the good work.

73

Ben Ronald VK2EHR,
3 Mullawa Place,
French's Forest, NSW. 2068.

AN INSIDER LOCKED ON THE OUTSIDE

Just browsing through the last few copies of *Amateur Radio*, I noticed with great interest that there seems to be some concern among members that new people are not attracted to this noble hobby. The reason in my opinion is that it is generally too difficult for a real amateur to become a radio operator. After all, an amateur is one who is interested in pursuing an art for the enjoyment of it, rather than being a professional. With readers indulgence I would like to relate my own experiences.

Some 25-years-ago I was in the Australian Regular Army as a professional soldier and wireless operator in the Signal Corps. I was a CW operator with a CW speed of over 25 WPM. But, we were operators, not technicians. We knew all about aerials, frequencies, dummy loads, microphones and procedures (much more disciplined and stricter than what I hear of in the amateur bands), but we learned nothing about resistors, diodes, screwdrivers or soldering irons. This was not necessary, you see, as if something fizzed a mechanic came and fixed it.

Upon leaving the Army, after operating radios full-time for six years, I wanted to get away from a couple and entered the business world. However, a couple of friends who were amateurs and after visiting their shack, I thought of getting into it again for pleasure. Now I have some radio equipment in the study, and a couple of dipoles in the backyard. I joined the WIA and started on the Correspondence Course (a very good one), but the licence seems further away than ever. Why?

Firstly, I operate my own business which keeps me occupied for some 65 hours per week. Thirdly, there is my family to whom I wish to devote some

time. Also, I try to put some effort and time into the community, scouts, church, etc. Finally, I cannot make myself at all interested in learning about capacitors, inductors, Ohm's Law, etc. Why should I? If my radio breaks down I will get someone to fix it. My wife operates a steam and dry iron — she doesn't need to know how it works. My children operate two computers but why should they need to know anything about the inside? Yet, when it comes to transceivers, that is different.

Has anyone tried learning subjects they are not interested in and that they know they are not going to use in the future, anyway? All I would like to do is to talk to someone far away occasionally. Nothing special, surely? I sometimes listen late at night (2 am) and I hear people from Israel, Germany and near the Tower of Pisa making DX calls. Either everyone is asleep or on a different band.

Also, I went to a WIA meeting in Brisbane. Once again, these meetings are geared for the technically minded. Amateurs drop in to deliver or pick up QSL cards, call signs, talk to each other about their experiences, but there is nothing there for outsiders, as without a call sign, you don't belong.

At the rate I am going, I should be able to sit for my licence in about 1998. This will not help the average age of amateurs. In the meantime, my QSA will remain 0.

Frustratingly,

Roelend Martin,
23 Lalg Street,
Kenmore, Qld, 4069.

USE THEM OR LOSE THEM

I believe that the adage, if you don't use 'em, you lose 'em applies not only to muscles and brain cells, but also to the WARC-bands as well.

There are some obvious reasons why some amateurs are not making use of the new bands. In the first place, there are still many transmitters and transmitters giving admirable service, but not covering the WARC-bands. The same would apply to ATUs and linears.

In other cases there are carefully-designed antenna systems which the operators are loathe to modify to take the new bands.

In other cases, I think sheer conservatism and an unwillingness to try something new is probably the basic reason why some never attempt to use the new bands.

All this is regrettable, but what is really shocking is to find that use of the WARC-bands was expressly forbidden in the 1986 John Moyle Contest.

Here we are, advertising to the whole world that VK amateurs will not use the WARC-bands in one of our most important national contests.

I am aware that some exclusion applies to other contests, including some important overseas ones.

I would suggest that those designing the rules for contests and awards take the opposite route and give bonus points for use of these bands, at least for say five years, until they are more widely used by the amateur community.

Indeed, there seems to be a case for the WIA to establish a new award especially for the WARC bands in order to encourage their use.

A good example was set by those who drew up the rules for the VKS Jubilee Award which is running throughout 1986. There are bonus points towards the award for using WARC bands, a formula which other award-designers could emulate.

It is not very difficult to get-out on a WARC band if your rig includes the equipment. Most of us have a pole, tower or other structure which will accommodate another piece of wire in the form of a dipole sloper/s for one or more of these bands (try 30 metres for a start). This will not have the gain of a beam which has been tuned and nurtured over the years, but it is a start — and a practical demonstration that we want the WARC bands and are determined to keep them.

Yours sincerely,

Ken Gett VK3AJJ,
38A Lansdowne Road,
St Kilda, Vic. 3183.

DISCUSSION PAPER

I have taken the April Editorial to heart and had another look on the Discussion Paper in the February issue. It is a well thought out proposition that deserves careful consideration. One aspect that could be looked at is the operation of so-called gentlemen's agreements.

The main thrust of the proposal appears aimed at the recruitment of computer enthusiasts. A high-technology, and therefore high-cost direction. This is probably as it should be and merits investigation but one major area of concern does not seem to have been considered.

There are two aspects involved — low cost and ease of acquiring equipment, plus use of Morse Code as a communication medium. These two can go hand-in-hand for a beginner. The building of a simple transmitter such as that by Drew Diamond on page 20, is a much easier starting point than some of the rigs pictured on AR's covers.

Low Cost — Most children of school-age — where we should be, and are, approaching them do not have a great deal of spending money. Their parents already have a steep education expenses and such things as excursions, sometimes interstate, etc. So . . . expensive amateur equipment is one of the major stumbling blocks to recruitment of a large number of potential amateurs. Once they leave school they are no longer so accessible.

Morse Code — I can almost hear you say — not that one again. Please bear with me a little while. I spent hundreds of hours getting myself to the point where I passed the AOC — in the first level mode, ie recognition of letters by their dot/dash construction. None of the training I underwent enabled me to get to second mode, let alone third mode recognition. My mind appears capable of quite high speed operation but does not shift easily to the more automatic modes. First mode is very tricky. I believe very strongly that the methods generally taught — including by the services — are adequate for some people and of virtually no use for others. Some time ago I did a survey of Service Morse Code Schools and could not find one person who knew anything about the psychology of teaching and learning Morse. A couple of people asked me to let them know if I discovered anything. A couple of enquiries overseas did not help. If the services know their average failure rate they can always load their courses to give them the number they want. We cannot afford that luxury.

Summary — Morse Code is a very good, low cost beginning point for potential amateurs. Many amateurs who passed the Morse tests did so with a skill that is not a viable one — it takes too much out of them psychologically to be enjoyable.

I suggest that the WIA should investigate different teaching and learning methods. Perhaps computer centred methods with visual display would help some! Perhaps there is a very simple method just waiting to be discovered. The often-voiced opinion that people who can't learn Morse are just lazy should be discouraged.

Many amateurs who spend more time on air if they could enjoy sending and receiving Morse Code.

Yours sincerely,

Neil Trainor VK3JJ,
133 Bladin Street,
Laverton, Vic. 3026.

At a recent meeting of FAMPARC, a debate was arranged on the Discussion Paper produced by Jim Linton and Roger Harrison, and the Club would like to thank them for the obvious work and effort that went into the article.

However, the general consensus of opinion after two hours of discussion was that, while we appreciate moves that will increase the interest and membership of our hobby, it should not be at the expense of the technical qualifications built up and increased during the years by members of the Wireless Institute in constant dialogue with the Department of Communications. It has taken great effort to acquire the benefits and amateur bands that we currently have the privilege of using, and any lowering of the standards of entry must be detrimental to the hobby.

Contrary to several opinions, it is *not* hard to gain entry into amateur radio — it does however, take a person with character and perseverance and a great will to join the amateur ranks.

There are hundreds of computer buffs who have entered amateur radio in the conventional way and are a great asset to the hobby, and no doubt there are many more who would benefit amateur radio, but by the same token there are hundreds of others to whom it would be just a *flash-in-the-pan*, and not understanding the spirit of amateur radio, cause a great deal of trouble and dissension.

It is a pity that the Discussion Paper was so long and covered so many suggestions, it was high on impossibility to cover the entire paper in one evening. However, at the conclusion of the debate, a motion was put that the members present consider the licensing qualifications required by the Department of Communications are adequate for the needs of amateur radio at present. The motion was passed — 19 for and three against, with three abstaining.

Gordon Buchanan VK3BGB,
Secretary,
Frankston and Mornington Peninsula Amateur Radio Club,
PO Box 38,
Frankston, Vic. 3199.

The discussion, and subsequent letters have certainly put some points of view, but I feel, looked at the symptoms rather than the causes. Perhaps we do not need more amateurs at any price, ie by twisting examination criteria. Rather, do we need more interest and less apathy from many of our present population.

For example, in Tasmania, there are over 500 licences. *How many of these are active, or listen but do not communicate? How many do any construction or are active in the WIA? Local answers would provide a fair yardstick for the national scene.*

So what has gone wrong?

The discussion overlooked the impact of developments in our society, affecting every facet of our life-style. Read the daily newspapers, full of wars, crime, violence, sex, divorce, alcohol, drugs, etc, which seems to dominate the news. Sunday is now a day of commerce, sport and fun. Like it or not, we are now practically a pagan country. The relevant point is that all this has affected our whole life-style, leaving at the very fabric of our society, including amateur radio, and it is no use burying our heads in the sand. The good old days have gone.

There is so much diverse activity offering that, whereas at one time, radio predominated the spare time of amateurs, it must take its turn with a multitude of other interests or even be replaced. Many would prefer to take a golf club, ski, or a ball and enjoy life. Or perhaps retire to the local, or go to the weekend shack.

Let us look at amateur radio of a few years ago, before television, computers or too much money interfered. To work and qualify for the AOC with a 14 WPM Morse test was considered somewhat meritorious. Subsequently, a frenzy of construction followed, as nearly all our rigs were home-brewed, tested, operated and maintained — likewise test gear. The amateur knew what it was all about with interest divided between construction and operating on air. We had long discussions on air about our gear, exchanging ideas and experiences, and offering advice. The bands were full and we cried for more space. This was amateur radio in the full sense. *What hope is there of this state returning?*

Without question, the enormous advances made in the field of electronics have only served to lure activity away from amateur radio and construction.

To suggest a *Symbiosis* between computer operators and amateurs is, in the main, a pipe dream. The former do quite nicely without the added study and expense of amateur radio. More likely amateurs are lured to computer activity.

It is unlikely that lowering or adjusting grades of licences will have any long term effect on the problem.

Already, to some, the situation in which licenses

are now obtained appears ridiculous. To take an examination one fills in some numbers or ticks (like a lottery) and hopes for some luck. If successful, all that is needed is some money for a black box. A far cry from the old days.

Now it seems that there is some suggestion for a kindergarten grade. Amateurs at any price! What a pity. Why not sell licenses at the Post Office?

For people who wish to communicate without serious study, the Citizen Band is there, and on UHF with repeaters appears to be quite successful.

Surely, if a thing is worth having, it is worth working for. Perhaps the real amateur is part of a dying race. After all, people will decide for themselves their activities, and the only proverb says: You can lead a horse to water but you can't make it drink. Radio is no longer a nine days wonder, perhaps amateur radio is on the way-out. We need a genius to solve it.

**Max Ives VK7MX,
Cosgrove Park,
Launceston South, Tas. 7249.**

In reply to the Discussion Paper, February's AR — the thrust of the paper is to have six licence levels (now four) so that we may increase the number of young men and women joining amateur radio; and to provide digital voice/data techniques on a wider scale than currently in use on the bands.

To years ago authors who suggest we make the entry points easier, hence the introduction of two new call allocations — the New Novice and the Intermediate.

I, and probably many others, agree on the paper's theme, however, the approach suggested is not only cumbersome, but impractical. Cumbersome because of the great variety of calls proposed and impractical because of not only call allocations, but because the real solution is not to be found by making entry into amateur radio easier.

Say, if the above proposals were introduced next year and we had, by the year 2000, the following: (Figures in brackets also assume we have 30 000 amateurs by 2000).

*Below 20 years — 15 percent (4500)
21-30 years — 20 percent (6000)
31-40 years — 20 percent (6000)
41-50 years — 15 percent (4500)
51-60 years — 10 percent (3000)
60 plus — 20 percent (6000)*

My figures are based on the early CB to amateur exodus, plus a further factor that indicates amateur radio will double every 13 years. Not unreasonable, provided the eventual total is no more than two percent of the total population. This is because we make amateur radio easier to enter and more attractive to youngsters. The distribution is, of course, ideal. I am amazed that a development of such a strategy is not being considered by the WIA. What would the result be if nothing is done? Must we rely on the sale of a paper to get the ball rolling? Are my figures appropriate or will we get thousands of new recruits?

From my figures we well may get an extra 50 percent new amateurs over the first five years and an extra 1200 or so extra every year after that. These numbers, if the proposals are implemented, are above the existing joining figures of about 400 a year. Quite a strain on the DOC at examination time, but the best part for the WIA would mean an extra revenue double that being received now.

My suggestion is to keep the existing four call allocations of Novice, Limited, Novice/Novice and Full Call, but drop the CW requirement from the Novice exam and give Novices 10 watts on 70 cm (SSB and FM). No data transmit privileges.

Five words per minute CW is not CW. To engage anyone at five words per minute for a QSO is impossible and very painful. Most novices conduct their QSOs at greater CW speeds. Indeed, most novices only do the CW to get a licence — not to engage in CW on the bands.

To give a new novice 70 cm FM only is just a waste of time. The real traditions of amateur radio are on the HF bands. We all know the benefits of

being able to sit and listen to HF for many enjoyable hours. Try listening to VHF/UHF for many hours — mostly silence, local calls and through a repeater. The advantage of FM VHF/UHF lies in the 400 watts PEP power, experimentation with sophisticated gear, transmitting ATV, satellite, RTTY or fast data. These are not within the reach of the youngster, but a cheap HF rig is and a 70 cm unit if needed can be attained either in kit form or from ex-commercial sources. If youngsters were asked which band they preferred I am sure it would be HF; not UHF so let's give them what they want, not what we want them to have.

Which HF band? 10 metres SSB/FM of course. It is a natural progression from the familiarity of CB and the FM part will be a challenge to get operational — and every youngster needs a challenge.

Every novice knows that the theory is not difficult but the CW is! Every novice thinks seriously about the limited exam and most pass it at their first attempt. The existing novice examination is not difficult and a couple of months of application will get anyone an exam pass. To make the exam easier is not, at this time, appropriate. If such a proposal does not work, then make the exam easier, but I believe CW is the barrier to the younger aspiring amateur — not the theory. Let us not make it easier for the sake of numbers, but let us make it a more exciting licence.

**Peter Frederick VK3BSF
61 Ashwood Drive,
Ashwood, Vic. 3147.**

SQUABBLING

So, it is time to squabble over licensing again. It has taken some people a long time to wake up to the fact that the amateur population is in decline. Some of us who have been in the education system for many years have seen that amateur radio is a non-issue with the youth of today. In fact, they do not know that it exists. The question should also be asked why are the many students of electronics at all levels in TAFE colleges not taking an interest? There is something wrong with amateur radio as it exists at present.

Electronics has progressed in quantum leaps in the last 20 years. Sadly, most of the amateur fraternity have regressed in their ideas about amateur radio. CB (with all its problems) was the best thing that happened to amateur radio in the last 50 years. Many of these people who started out as pirates became licensed CBers when it was legalised and then took up amateur radio. The key to this is that they bought their equipment, they used it and then wanted something more. The amateur fraternity wants all people to sit in classes for up to a year learning theory out of a book with the prospect of getting on the bands at a much later date.

Most amateurs begrudgingly accept the new blood brought to the hobby of amateur radio by the bone-less CB. It is almost always used as a derogatory term by many amateurs who sit around reminiscing about the old days, the attempts to jam people on 11 metres, the pinching of our bands, etc. These people are not rabble stirrers, we are sure they are solid citizens. Of course, it is still going on by other responsible citizens (see editorial in ARA, February 1986). We ask you, what prompts the amateur and the licensed amateur to jam a UHF CB repeater for seven hours every night?

The amateur radio fraternity has long suffered from a combination of arrogance and elitism. Amateurs always keep telling each other how important they are to the community. We put it to you that 99 percent of the community do not know anything about amateur radio and frankly, do not care. This we are important to the community argument may have been true in the past but it is wearing a bit thin in the 1980s. It only serves to fool people that amateur radio is not just another hobby but something special.

We are sure it is something special to most of the current amateurs; but not for long. One only has to browse through the pages of the WIA Journal, Amateur Radio, to realise that amateur radio is an old man's hobby. In all the pictures you

would be lucky to find a person under 40, and virtually no women or teenagers. Contrast this with a meeting of MBUC (Microbe Club), there you will find a truly representative cross-section of the population.

Looking at the statistics on the amateur population, it is clear to see why this is the case. One can turn around the bands most of the time and find great expanses of nothing. Most of the bands resemble 11 metres before CB took over. The spectrum is a scarce, natural and public resource and should be used by as many people as possible. The aim of the licensing system should be to maintain order on the bands and ensure there is no interference to other users. The current system, which is based on the maintenance of technical standards argument serves only to keep by far the greater majority of the people interested, off the air.

The arrogance, the elitism, the resistance to change that pervades the amateur fraternity is shown very well by the letter from Mr B Wilton VK3XV on the Linton/Harrison proposal: *This would appear to be a retrograde step... I seriously wonder who would gain the most from this 'marriage'... the amateur radio movement or the computer hobbyists? We must not allow our technical standards to be lowered — if anything they should be raised. No problem, Mr Wilton. Keep the bands to yourselves so most of you can sit there with your expensive, off-the-shelf toys and carry on inane conversations, ineffectually passing for traffic related to technical investigations, research into or instruction in radio communication techniques. But maybe the DOC should take you up on the raising of technical standards. In fact, re-testing should be introduced for every amateur every three years. The DOC can then make sure that all are up-to-date with the latest micro-processor technology used in the latest transceivers. Many of the amateur population take themselves too seriously with all this technical standards nonsense. The way most amateurs keep up with technological developments is by buying the latest micro-processor controlled transceiver!*

These arguments about standards will serve only to maintain the elitism of amateur radio and eventually allow it to die. We cannot understand how these people expect amateur radio to survive and expand if the current population of amateurs is aging and very few new young people are entering.

We think the Linton/Harrison proposal does not go far enough. It is basically a slight rearrangement of the current system. We suggest that a totally new approach be taken. The Canadian proposal seems the more sensible and logical:

a For operations on all bands and all modes above 30 MHz, using commercial equipment only, with 250 watts.

— A shift away from technical knowledge and an emphasis on the knowledge of regulations, interference and safety of the current theory.

b For operation below 30 MHz.

— 12 words-per-minute Morse.

c For operation on all bands and all modes with the option of building equipment and 1000 watts. — Knowledge of advanced electronic theory.

In fact, we would go further, eliminate the Morse requirement totally. Australia has to date not adhered to ITU rules by allowing 10 and five words-per-minute for operation below 30 MHz.

This type of licensing would have the effect of increasing the amateur population by bringing in many people who have an interest in electronics, computers and communications but normally use commercial equipment. There are many people who are responsible citizens who would be lesser numbers than some of the currently licensed amateurs. As has been shown many times in all walks of life, passing exams does not guarantee proper and civilised behaviour.

One argument that is advanced against commercial equipment is that it will be too expensive for young people to get into. This argument is made in the March issue of ARA. To this we say look at the price of commercial radio equipment at the bottom end of the market, it is cheaper than most computers. Do you see young people not getting interested in computers

because of the price? With the right form of licensing it could even stimulate the local manufacture of suitable equipment for beginners. Philips is certainly well set up for UHF equipment (eg FM 620).

Drastic changes will be made in the future, otherwise the amateur population will simply die-off. Why not implement something along the lines of the Canadian proposal now and be in the forefront of the development of the hobby instead of having the WIA and many other conservative amateurs fighting change until they literally die and in the process kill amateur radio.

Amateurs are allocated just over 1508 MHz of spectrum space. Most of this is now prime space which the current amateur population as it stands, hardly makes an impression on.

The pressure for spectrum space is increasing exponentially. How long will it be before commercial interests and the government start to take a good, hard, look at those large slabs of little used space allocated to amateur radio in the VHF and UHF bands, especially?

We call on the Minister for Communications, DOC, the WIA, ARA and all progressive amateurs to work towards a totally new licensing system. A system that takes into account the technology of the 1980s. A system that allows a much greater proportion of the population on the air. A system that is attractive and has relevance to the youth of today.

Signed by:
Harry Fatouros, Computer Department 1980-1985,
Preston Technical School.
Chris Holliday VK3JU, Preston Technical School,
(VK3CPT).
Frans de Bruijn VK3KFV, Box Hill College of TAFE.
Greg Segal, GWS Audio/Visual.
Ian Batty VK3ZEV, Former Co-ordinator (TV),
Moorabbin College of TAFE.
Peter Cossins VK3BFG, Electronics Technology,
Box Hill College of TAFE.

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AUSTRALIA'S DYNAMIC ELECTRONICS MONTHLY

Electronics Today

FIBRE OPTICS ARRIVES

Having been talked about for years fibre optics finally makes it to the market. There are large scale operations now for its installation and manufacture.

ALSO IN JUNE

- ★ ETI puts the Marconi 2955 communications service monitor through its paces.
- ★ Starting Electronics: a look at opto-electronics.
- ★ Printed Circuit Boards: a revolution in manufacturing.

PROJECTS: ★ Electrostatic hazard alarm

★ Intelligent modem

★ Car demister timer

★ Digital sampler

Silent Keys

It is with deep regret we record the passing of—

MR MAXWELL H BONE	VK5BMH
13th March 1986	
MR GEORGE HUMPHREY	VK2ZNO
18th March 1986	
MR C H JUDD	VK5HQ
PROFESSOR RICHARD KELMAN	VK2EEW
4th March 1986	
MR EDWARD (Ted) SIMPSON	VK2ES
21st June 1985	
MR ARTHUR L STEHN	VK4IS
16th March 1986	
MR ALEXANDER (Alec) G SWINTON	
VK3AAP (ex2AAK, 2AAG)	
25th March 1986	
MR C E WALTON	VK3PWA

Obituaries

ARTHUR L STEHN VK4IS
Arthur passed away on 16th March at Maleny Hospital, having suffered declining health for sometime. He was first licensed as VK4ZLS in 1965, then obtaining his full call VK4IS in 1968, whilst at Rockhampton.

His other hobbies included photography and woodworking. During his working life he was attached to the Education Department, Meteorology Department and PMG's Department from which he retired. After retirement, he operated the Montville Model Railway Dome. This is where I first met Arthur in 1980. We became firm friends, then neighbours whilst living at Flaxton.

Arthur was one of nature's gentlemen. Deepest sympathy is extended to his wife Florence, daughter Denise, and son Ronald. Roy Stephens VK4BRS (ex VK3ARS) *ar*

RICHARD KELMAN VK2EEW
Professor Richard Kelman VK2EEW came to Australia three-years-ago to establish the chair of Occupational Medicine at the University of Newcastle. The professional chair he held was only the second of its kind in Australia.

He passed away on 6th April 1986, at the age of 52.

Richard was an affable and friendly man who quickly made friends in the community and within the ranks of amateur radio. He confined his operations to CW in the HF bands. In addition, he was a skilled computer experimenter and programmer.

Richard had a distinguished academic career in the United Kingdom before coming to this country. His qualifications included Master of Science, Doctor of Medicine and PhD.

He leaves a wife, Elizabeth, and three adult children to whom we extend deepest sympathy. He will be sorely missed by his many colleagues and friends.

Contributed by Tony O'Brien VK2BOA *ar*

Did you know?

Hamads are a free service to members of the WIA.

When contemplating buying or selling equipment, check the Hamads first.

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AUSTRALIA'S LARGEST RANGE OF SECOND HAND:

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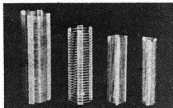
Oscilloscopes, sig gens, spectrum analysers, multi meters. Wide range of amateur and communications equipment — valves, coaxial connectors and test accessories. Repairs and service to all makes and models.

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3-16	1/8"	16	3"	No 3011	\$2.30
4-08	1"	8	3"	No 3014	\$2.60
4-16	1"	16	3"	No 3015	\$2.60
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SOLAR GEOPHYSICAL SUMMARY — FEBRUARY 1986

Solar activity for February was dominated by two regions which returned to the visible solar disc late in January. The regions produced a sequence of energetic solar flares, including X class events on 4th and 6th.

Feb 1	Class M1	2034-2115 UTC Effect times
Feb 4	Class M1	1018-1054 UTC
	Class X1	0732-0805 UTC
Feb 5	Class M1	1232-1321 UTC
Feb 5	Class X1	0618-0707 UTC
Feb 7	M1	0947-1126 UTC
Feb 11	M2	0328-0413 UTC
		2259-2345 UTC
Feb 13	M1	0102-0419 UTC
Feb 14	M1	0902-1026 UTC
Feb 15	M2	1016-1300 UTC
		1304-1316 UTC

The regions also produced a sharp rise in the 10 cm flux levels which peaked at 103 on 5th. This flux value is the highest for any day since 5th July 1984. The regions had disappeared over the western edge of the sun by the 15th and the flux levels dropped to low levels.

The first of the previously active regions re-appeared on the visible disk of the sun on 26th and produced a rise in the 10 cm flux late in the month.

10.7 CM FLUX

1=84; 2=90; 3=99; 4=101; 5=103; 6=102; 7=99; 8=98; 9=95; 10=99; 11=98; 12=91; 13=89; 14=90; 15=82; 16=73; 17=20; 21=67; 22,3=68; 24=70; 25=72; 26=74; 27=77; 28=79.

Average = 83.9. Sunspot number 23.6. Yearly average 8/85 = 16.6.

GEOMAGNETIC ACTIVITY

7-9/2 The geomagnetic field became disturbed towards the middle of the 7th and was at major storm levels by the end of the day. 8th was one of the most disturbed days in the last 25 years. The early part of the 9th was also very disturbed but weakened towards the middle of the day. A=57, 208, 74.

14/2 The field was active 1400-2100 UTC. A=25.

21-28/2 The field was generally disturbed for the entire time, the worst periods being 09-1400 21st, 00-0200 and 14-1800 on 22nd and 00-1800 on 23rd. A=22, 23, 25, 15, 17, 20, 19, 19.

The magnetic disturbance of 7-9th was a particularly noteworthy feature of the month. It is difficult to compare disturbances, this event was large by any standards and was probably the largest since November 1960. It coincided with reports of aurora sightings from much of mainland Australia. Sightings ranged from just north of Sydney, Northern New South Wales and around Brisbane. This event was almost certainly caused by the X class flare at 0625 UTC on the 6th.

The A index average more than doubled from 11.5 in January to 23.4.

Extracted from Solar Geophysical Summary supplied by the Department of Science (PS) Radio and Space Services *ar*

AMATEUR CARTOONS

The name Phil Gildersleeve W1CJD, would probably mean little to most amateurs but to the readers of QST and some ARRL ancillary publications, from 1927 until the 1960s his work would be very familiar. Phil was known simply as Gil and was responsible for many hundreds of humorous cartoons which appeared in ARRL publications.

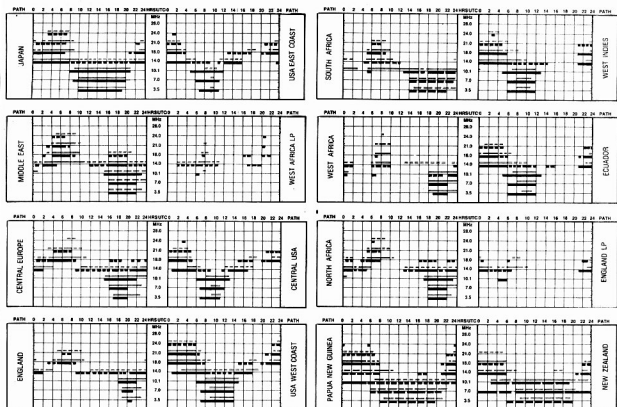
A new ARRL book, titled Gil has reprinted the best of these cartoons.

Should be most interesting for the old time subscribers to QST.

From The ARRL Letter

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic. 3060



LEGEND

From Western Australia (Perth)

From East Australia (Cairns)

Better than 50% of the month but not every day
Continuous line

Less than 50% of the month (short broken line)
Mixed Mode Dependent on angle of radiation
Long broken line

Path unless otherwise indicated in (P=long path) all paths are short path

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

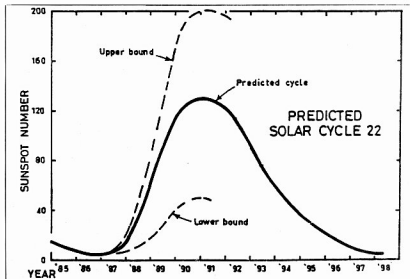
FUTURE TRENDS IN SOLAR ACTIVITY

Solar Cycle number 21 is now approaching its end as the yearly-averaged sunspot number drops to values typical of solar minimum conditions. At this time, it is appropriate to ask what the next solar cycle will look like. The subject has been (as usual) the centre of keen debate for a number of years and (as is also usual) there is no consensus view whatsoever. In particular, estimates of the maximum sunspot number of the next solar cycle vary wildly — from as low as 50 to as high as 200.

IPS has prepared a prediction based on the most highly regarded techniques of the papers presented at the *Solar-Terrestrial Predictions Workshop* held in Paris during 1984.

It predicts the minima of Cycle 21 late in 1986 and Cycle 22 rising to a peak of 130 in mid-1990 and falling to around 10 in 1998.

Cycle 21 went into the history book as the second highest since records began. I guess we will just have to be patient and see what happens. In the meantime, just keep an ear on the daily reports to find the best periods. The DX is there even on 28 MHz for those who are in the know.



THOUGHT FOR THE MONTH

Silence is better than unmeaning words.

PORTABLE PHONES SON

A new mobile telephone service, in the form of low powered pocket phones and vehicle mounted units, being introduced in Australia will take personal communications into the 21st century.

The high capacity cellular radio system with 600 channels at 800 MHz will begin in Sydney around December, be introduced in Melbourne by March 1987, and progressively spread to other areas.



DEADLINE

All copy for inclusion in the July 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 20th June 1986.

Hamads

PLEASE NOTE: If you are advertising items **FOR SALE** and **WANTED** please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamads as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers.
* Eight lines free to all WIA members. \$9.00 per word minimum for non-members.
* Copy in typescript, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162.
* Reprints may be charged at full rates.
* QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.
Conditions for commercial advertising are as follows:
\$22.50 for four lines, plus \$2.00 per line (or part thereof).
Minimum charge — \$22.50 pre-payable.
Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver & transmitting applications. For data & price list send 105x220mm SASE to: RJA & US IMPORTS, Box 157, Mondrale, NSW 2223. (No inquiries at office... 11 Macken Street, Oakley). **Closed for business during July Agencies at:** Geoff Wood Electronics, Rozelle, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co. Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

WANTED — NSW

COMPLETE MANUAL OR CIRCUIT DIAGRAM: for Trio Model TR-2E for 2m. Brian VK2DHO, QTHR. Ph.(068) 62 2629.

ICA AR88D: must be complete & mech good cond. Brian Robertson, 32 Robert Street, Telopea, NSW 2117. Ph.(02) 971 4863.

VALVE: 6GY6 or 6GX6 or 6H26, for Galaxy Icvr. VK2VJ, QTHR. Ph.(02) 500 0985.

YAESU FT-690R & FT-790R. Also accessories — YM-49, YM-50 mics, MMB mounts, FLC cases. Bob VK2CAN. Ph.(02) 265 8064 (BH) or (02) 46 3727 (AH).

WANTED — VIC

COMPLETE WORKSHOP SERVICE MANUAL: or photocopy of Siemens M100 (Series 1) teleprinter. Lyle VK3KLF. Ph.(03) 555 2801 (AH).

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HELIX LDF-4-50A: unused length of 8m for \$65. Brand new set of 8 C-sized NICAD batts @ \$4.50 each. Ph. (02) 81 2652.

KENWOOD TR-9500 UHF ALL-MODE TCVR: in immac cond complete with mic, m/bracket, manual, no mods, no bugs. \$500. Kenwood SW-100 UHF SWR meter to match above. \$40. Max VK2QGF, QTHR. Ph.(043) 92 4900.

KENWOOD TS-430S: F tx. All filters, FM board, workshop & operators manual, mic, inc. 900, 25A IHB power supply. \$100. MC-50 mic. \$40. TS-430S workshop manual. \$25. Shure 444 mic. \$100. Shure 444 mic. \$75. \$500W Tandy SWR/PWR meter. \$20. Drake TVI 444 SWR rating. \$20. HVB 110, \$100. Steve Allen Wilkinson VK2PKB. Ph.(049) 32 8935.

SHACK CLEARANCE: Icom 701 in mint cond with IC-701PS, desk & hand mics, manuals, just serviced by Icom. \$600. Yaesu 227RB 2m rig, with scan mic, manual. \$225. ATN-144 Log periodic, 8el ant & Dick Smith mini-rotor with cable. \$125. 100sf shower & laundry. 50 feet free air radio tower for practice to 50 WPM. \$100. VK2A00, QTHR. Ph.(063) 62 5977.

TRAPPED VERTICAL ANTENNA: V5JR for 10-80m (DSE D-4305). \$60. Bob VK2CAN. Ph.(02) 265 8064 (BH) or (02) 46 3727 (AH).

VZ990 COMPUTER: PIS etc in orig packaging with DSE RTTY interface + leads. \$120 O.N.O. 15k VZ300 memory expansion in orig packing. \$70. Programs — log, ant design, RTTY, CW, assembler, dis-assembler, etc. \$10. The lot \$170 VZ990. PO Box 433, Coffs Harbour, NSW. 2450. Ph.(066) 52 7160.

YAESU FT-5757G: \$1100. AWA noise & distortion meter \$200. Signal generator 45-180 MHz. \$110. FM monitor/heterodyne 40-270 MHz. \$80. Cavity tuned ACX250 output stage 420-470 MHz. \$75. Power supply for above. \$30. Peter VK2CPK, QTHR. Ph.(02) 2326 7889 (BH) or (02) 411 1227 (AH).

FOR SALE — VIC

ASACA 84W CAMERA: with variable lens, circuits & books. Also monitor. Used for SSTV or security watch. Mint cond. \$350. Ph. (03) 725 9285.

DAIWA 7600X HEAVY DUTY ROTATOR: With pre-set controller, never used; brand new. \$350 O.N.O. Must sell. Steve VK3QDL, QTHR. Ph.(050) 37 2391.

HAMPAC MODEL III FOR APPLE COMPUTER: Complete with instructions & software. As new. \$100. Andrew VK3KIR, QTHR. Ph.(03) 232 9649.

KENPO ELEVATION ROTATOR: Type KP-500, 28V ac, new in box. \$200. Rolex Airman's watch, Oyster Perpetual. SS GMT Master Superlative Chronometer, officially certified with Rolex Oyster Bracelet. Ex cond. \$900 O.N.O. (new price \$1590). VK3BRE, QTHR. Ph.(055) 62 6015.

KENWOOD TS-820S TCVR: with MC-50 mic in ex cond. Very little use. \$500. Craig VK3NAG. Ph.(03) 337 6287.

KW TR-9130 MULTI-MODE 2m TCVR: c/w BO-9 base stand. Ideal for satellite use. Ex cond. \$500. VK3APT, QTHR. Ph. (05-4) 28 6516 (AH).

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YAESU FT-902D HF TCVR: including hand mic, power lead & operation manual. \$600. Also IC-202 2m SSB Icvr with OSCAR call sign, hand mic & documentation. \$100. Steve VK4AOW, QTHR. Ph.(070) 91 1435.

FOR SALE — SA

ATTENTION — AN EME ENTHUSIAST: Owing to work load limitations place on me due to back injury I must sell my partially completed EME installation for part of its full value. 24 x 16' aluminium pop riveted trusses shaped & assembled ready to make 32' parabola (dish) antenna with 1d 0-40 & 31 dB projected gain on 70 cm, 1296 MHz gain well over 40 dB. All 7/8" al tubing, vertical supports and notched, gusset plates & moment rivets. All completed central hub assembly (welded steel industrial tubing). Solidly constructed reverse rib truss & separate precision axle for testing shape of parabola. On hand materials include 3 rolls 1/2" square welded & galv steel mesh to cover dish; 3/4" al tubing to complete concentric rings; enough 7/8" al & 1" steel tubing to probably complete construction; 43" turntable for azimuth movement; complete with shattering, gear-box, & 240V motor; assembly equipment incl rolling mill for shaping aluminium, notching machine, 96 SS bolts for central hub, quantity pop rivets, gusset plates, etc. Also 16' 4-leg tower for mounting dish (needs to be cut from concrete base made from heavy angle steel, rust treated & undercoated). All above \$2900 cash. (An array of 16 x 16 ft antennas with power dividers, rotators, mast, H frames, cross arms, phasing lines, etc. will cost \$4000 & still be 5 to 6 dB lower in gain than this dish). Also electronic equip avail for sale after dish is sold — first offer to buyer of dish. K2R1W 1000W 70 cm amp, parts to construct 2 kW power supply. Drake R45 rx & T4X3 tx, blowers. Rustek char recorder, dx meter, MM 1296 MHz transverter plus 100W 1296 MHz tx (ex VK2J29), spare valves & other parts. Eric Jamieson VK5LPL QTHR. Ph.(08) 389 1204 inspection by appointment only.

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YAESU YD-148 DESK MIC: new & unused 6 pin. \$35. 32' al. antenna luvr, home brew. \$25. Teak Computer Desk, new. \$70. 2m, new, unused floppy disks. \$50 the lot. Charlie VK5CY. Ph.(08) 258 0320.

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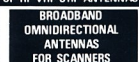
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